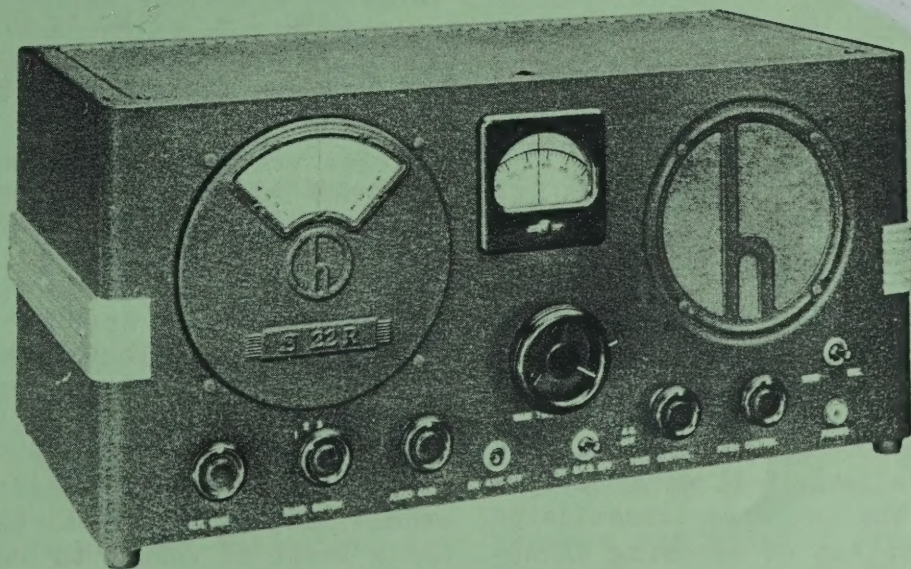


OPERATING
ALIGNMENT and SERVICING
INSTRUCTIONS
for the
SKYRIDER MARINE
MODEL S-22-R



the hallicrafters *co.*

CHICAGO U.S.A.

OPERATING AND ALIGNMENT INSTRUCTIONS

SKYRIDER MARINE MODEL S22R

INSTALLATION: - It is recommended that, upon receipt, the carton and then the receiver be carefully examined for any damage which might have occurred in transit. File claim with the Carrier immediately should any sign of damage be apparent.

NOTE: The SKYRIDER MARINE Model S22R is an AC-DC receiver which operates on 110/125 volts only. Should operation be desired from a lower voltage DC source, an external converter delivering 110/125 volts should be used. A 220 volt DC Model S22R is available on order and uses a special line cord with dropping resistor.

Cabinet Dimensions: Length $18\frac{1}{2}$ " Depth $9\frac{1}{4}$ " Height $8\frac{1}{2}$ ". The receiver can be placed in any location convenient to its power source and antenna. Inasmuch as the Model S22R chassis is at the same ground potential as the cabinet the possibility of a short between chassis and cabinet is removed.

ANTENNA: - On the rear chassis apron will be found the Antenna Strip. A conventional Marconi, inverted "L", antenna should be connected to the A_1 terminal and the jumper between A_2 and G left connected. In order to get the most satisfactory pickup throughout the low frequency tuning range of the receiver, it is advisable to use the longest piece of wire for an antenna that it is possible to install. This same antenna will also perform satisfactorily on the higher frequencies. Should a commercially available "all wave" doublet antenna be used, the two wire transmission line from the flat top or matching transformer should be connected to terminals A_1 and A_2 with the jumper removed from A_2 and G. Should you wish to have a separate antenna for some one short wave frequency or band, a half wave antenna cut for that frequency will be an excellent performer. The following formula will give the length of the $1/2$ wavelength antenna depending on the desired frequency.

Length in feet $\frac{468}{\text{frequency in megacycles}}$ or
for example, a half wave 40 meter antenna would be $\frac{468}{7} = 66.8$ feet long. A good

ground, if it aids reception, should be connected at the G terminal.

OPERATION: - After connecting an aerial to the receiver, plug the power cord into the power socket. Now turn the control marked "Tone" to the right. Power is now connected to the receiver as will be indicated by the dial light behind the translucent dials. Allow a few moments for the tubes in the receiver to reach operating temperature.

Place the band switch in position #2 for standard broadcast coverage. The frequency range of the receiver by bands is as follows:

- Band 1 - 110 Kc to 410 Kc
(2730 to 733 meters)
- Band 2 - 400 Kc to 1500 Kc
(750 to 200 meters)
- Band 3 - 1.7 Mc to 5.9 Mc
(177 to 51 meters)
- Band 4 - 5.3 Mc to 18 Mc
(56 to 16.7 meters)

The sensitivity of the receiver is adjusted by the "RF Gain" control.

The "AF Gain" control adjusts the volume of both the loud speaker and headphone circuits. **NOTE:** When receiving telephone signals, the AVC or automatic volume control switch should preferably be ON. The "RF Gain" is then rotated clockwise as far as it will go, or the position of maximum sensitivity. The signal is then adjusted for a level of volume to suit your particular requirements with the A.F. Gain control. With the AVC switch OFF, the sensitivity of the receiver should be manually controlled by suitable adjustment of the RF Gain control or the receiver will block or overload. After you have familiarized yourself with the operation of the receiver you will determine the proper settings of these controls for the most favorable signal to noise ratio.

The BFO switch places the beat frequency oscillator in operation when snapped to the ON position. Adjustment of the knob

marked "Pitch Control" will enable you to change the pitch of the beat note to one most pleasing to you. The "Send Receive" switch, in the SEND position, removes plate voltage from the tubes in the receiver which makes it inoperative during a transmission or stand-by period.

Inasmuch as no direct current flows in the headphone circuit, crystal type headphones can be used. When headphones are plugged into the headphone jack, the speaker is

automatically disconnected.

NOTE: In keeping with the Underwriters recommendations the fuse block is mounted on the under side of the chassis. 250 volt 2 ampere replacement fuses can be installed only after the bottom plate has been removed from the receiver.

The Model S22R SKYRIDER Marine Receiver draws 50 watts at 117 volts 60 cycles A.C.

GUARANTEE

This receiver is guaranteed to be free from any defect in workmanship and material that may develop within a period of ninety (90) days from date of purchase, under the terms of the standard guarantee, as designated by the Radio Manufacturers Association. Any part or parts that prove defective within this period will be replaced without charge when subjected to examination at our factory, providing such defect, in our opinion, is due to faulty material or workmanship, and not caused by tampering, abuse or normal wear. All such adjustments to be made FOB the factory.

Should this receiver require any adjustments, your dealer or distributor has complete technical service information, or the factory will be glad to assist you in

any problem direct.

Should it be necessary to return any part or parts to the factory, a "Return Material Permit" must be obtained in advance by first writing the Adjustment Department, who will issue due authorization under the terms of the guarantee.

The Hallicrafters Co., reserves the right to make changes in design or add improvements to instruments manufactured by them, without incurring any obligation to install the same in any instrument previously purchased.

All Hallicrafters receivers are built under patents of Radio Corporation of America and Hazeltine Corporation.

ALIGNMENT PROCEDURE

ALIGNMENT INSTRUCTIONS:

Equipment needed for aligning:

- 1 - An all wave signal generator which will provide an accurately calibrated signal at the test frequencies indicated.
- 2 - Output indicating meter connected to a headphone plug, and inserted in the headphone jack.
- 3 - Non-metallic screw driver.
- 4 - Dummy antenna of .0002 mfd. condenser and 400 ohm resistor.

SETTING OF CONTROLS PRIOR TO ALIGNMENT - IF AND RF.

- 1 - Tone control at maximum high frequency position.
- 2 - AVC switch OFF.
- 3 - BFO switch OFF.
- 4 - RF Gain at maximum.
- 5 - AF Gain at maximum.

1600 Kc IF ALIGNMENT.

Tune receiver to 5,000 Kc with the band switch in #3 position.

Connect hot side of signal generator to 6K8 grid cap through .01 mfd. condenser - ground of generator to the chassis. Signal generator output - 1,600 Kc.

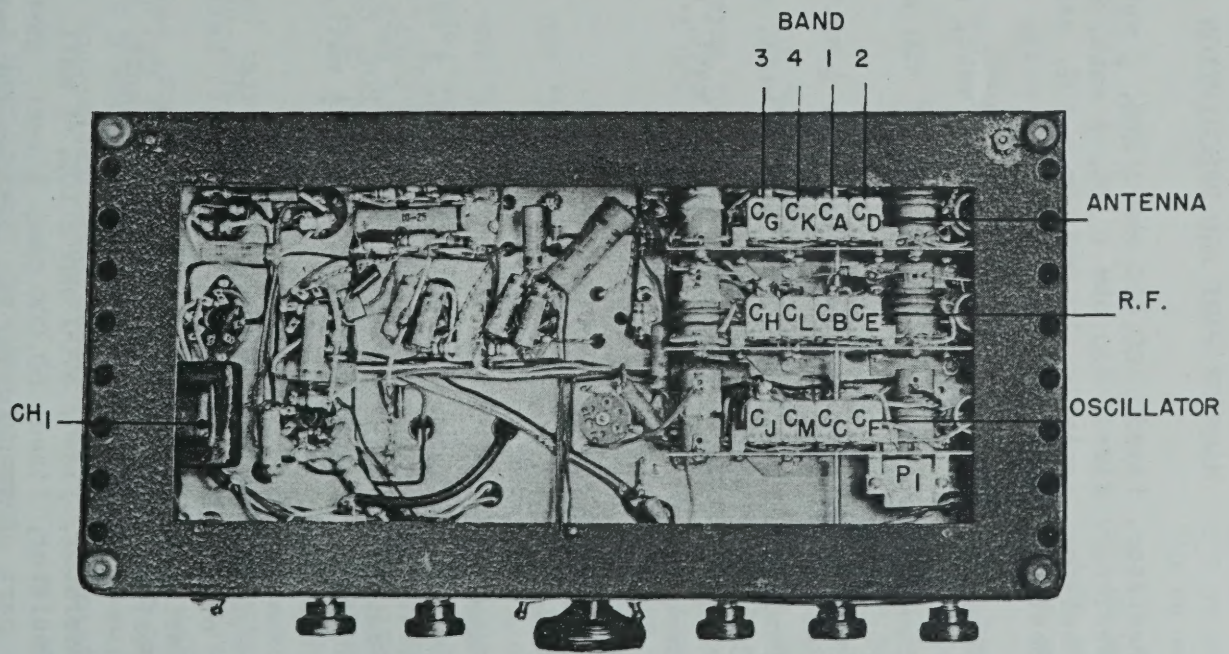
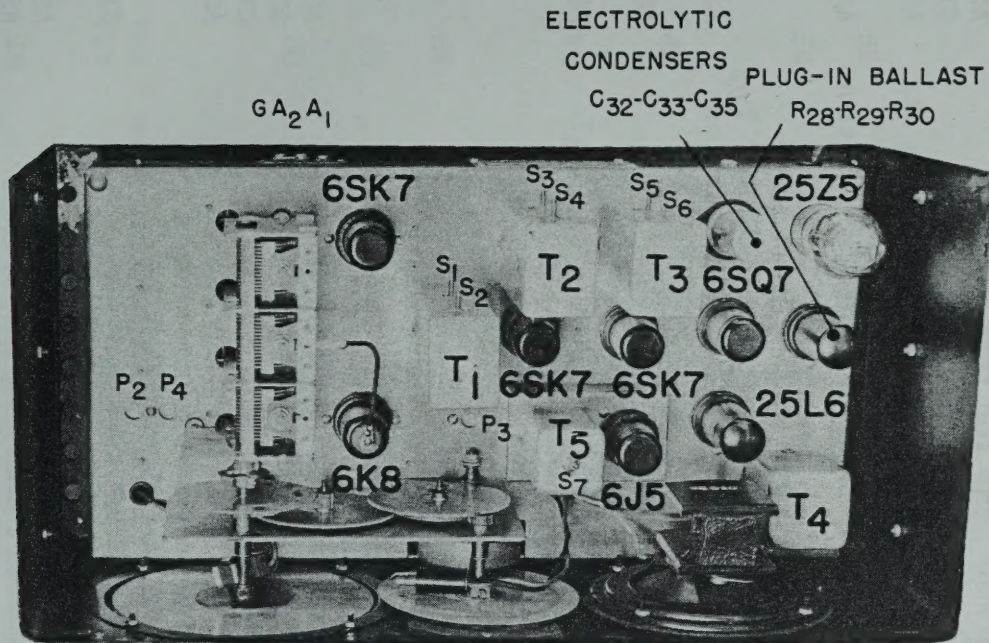
Adjust screws S1 to S6 inclusive on IF transformers T 1-2-3 for maximum gain.

BFO ADJUSTMENT - With a 1600 Kc signal being fed into the IF amplifier, and the BFO switch ON, place the Pitch Control with the white dot UP. Now adjust the screw S7 on the top of T5 for zero beat. Further adjustment of the Pitch Control from the front of the panel will enable you to vary the frequency of the beat note to your satisfaction.

R.F. ALIGNMENT

Connect hot Lead of Signal Generator to A_1 through dummy Antenna shown in Table.
Leave Jumper connected between A_2 and G. Ground of Generator to Chassis.

BAND	REC. DIAL SETTING	SIG. GEN. FREQ.	DUMMY ANTENNA	HIGH FREQUENCY END		LOW FREQUENCY END
				ADJUST OSC WITH	ADJUST TRIMMERS WITH	ADJUST OSCILLATOR WITH
1	125 Kc	125 Kc	.0002 mfd	-----	-----	P_1
	350 Kc	350 Kc	.0002 mfd	C_C	C_A-C_B	-----
2	450 Kc	450 Kc	.0002 mfd	-----	-----	P_2
	1400 Kc	1400 Kc	.0002 mfd	C_F	C_E-C_D	-----
3	2 Mc	2 Mc	400 Ohm	-----	-----	P_3
	4.5 Mc	4.5 Mc	400 Ohm	C_J	C_G-C_H	-----
4	7 Mc	7 Mc	400 Ohm	-----	-----	P_4
	15 Mc	15 Mc	400 Ohm	C_M	C_L-C_K	-----



REPLACEABLE PARTS LIST FOR S-22R RECEIVER

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
R ₁	Resistor, fixed, 100,000 ohm \pm 20%, $\frac{1}{2}$ watt, carbon	A-V-C decoupling	ASA	RC21AE104M
R ₂	Resistor, fixed, 330 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₁	ASA	RC21AE331K
R ₃	Resistor, variable, 10,000 ohm \pm 20%, carbon	R.F. GAIN control	CT	25C039
R ₄	Resistor, fixed, 470 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Voltage drop in plate of tube V ₁ for Band 2	ASA	RC21AE471K
R ₅	Resistor, fixed 1000 ohm \pm 20%, $\frac{1}{2}$ watt, carbon	Plate and screen decoupling for tube V ₁	ASA	RC21AE102M
R ₆	Same as R ₁	Overload bias		
R ₇	Same as R ₁	Secondary loading in transformer T ₁₀		
R ₈	Resistor, fixed, 47,000 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Grid return for oscillator section of tube V ₂	ASA	RC21AE473K
R ₉	Resistor, fixed, 390 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₂	ASA	RC21AE391K
R ₁₀	Same as R ₁	A-V-C decoupling for tube V ₃		
R ₁₁	Resistor, fixed, 220 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₃	ASA	RC21AE221K
R ₁₂	Same as R ₅	Plate and screen decoupling for tube V ₃		
R ₁₃	Same as R ₁	A-V-C decoupling for tube V ₄		
R ₁₄	Same as R ₉	Cathode bias for tube V ₄		
R ₁₅	Same as R ₅	Plate and screen decoupling for tube V ₄		
R ₁₆	Same as R ₁	Diode load for tube V ₅	ASA	RC21AE274K
R ₁₇	Resistor, fixed, 274,000 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Diode load for tube V ₅	ASA	RC21AE105M
R ₁₈	Resistor, fixed, 1 megohm \pm 20%, $\frac{1}{2}$ watt, carbon	A-V-C decoupling	CT	25C041
R ₁₉	Resistor, variable, 500,000 ohm \pm 20%, carbon	AUDIO GAIN control	ASA	RC21AE682K
R ₂₀	Resistor, fixed, 6,800 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₅		
R ₂₁	Same as R ₁	Plate decoupling for tube V ₅		
R ₂₂	Same as R ₁₇	Plate load for tube V ₅	CT	25C040
R ₂₃	Resistor, variable, 500,000 ohm \pm 20%, carbon, includes SPST switch on rear	tone CONTROL		
R ₂₄	Resistor, fixed 130 ohm \pm 5%, 1 watt, carbon	Cathode bias for tube V ₇	ASA	RC31AE131J
R ₂₅	Resistor, fixed, 100 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Impedance matching for headset operation	ASA	RC21AE101K
R ₂₆	Resistor, fixed, 4700 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Plate load for tube V ₆	ASA	RC21AE472K
R ₂₇	Resistor, fixed, 50,000 ohm, $\frac{1}{2}$ watt, carbon, part of transformer T ₅ . Shown for reference only	Grid bias for tube V ₆		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
R28 R29 R30	Resistor, plug-in ballast tube, resistance across pins 2 and 3 is 500 ohms, across pins 2 and 8 is 240 ohms and across pins 7 and 8 is 120 ohms, type BK29D	Line voltage dropping Pilot lamp shunt Pilot lamp shunt	MT	24A816
R31 R32	Resistor, fixed, 27 ohm \pm 10%, 1 watt, carbon			
R32	Resistor, fixed, 3900 ohm \pm 10%, 1 watt, carbon			
R33	Same as R1	Rectifier peak current limiter	ASA	RC31AE270K
C1A C1B C1C	Capacitor, variable, 3 section ganged, min. cap. 12.5 mmfd. max. cap. 562.8 mmfd. per section, 3 mtg. spade bolts 7/16" long, 2 at front with 1 at rear, air dielectric, steel frame, special	Main tuning, antenna stage Main tuning, converter stage Main tuning, oscillator stage	OM	48B059
C2	Capacitor, fixed, 0.01 mfd. -10 + 40%, 400 V. D-C working, paper dielectric		SP	46AW103J
C3	Capacitor, fixed, 0.05 mfd. -10 + 40%, 400 V. D-C working, paper dielectric		SP	46AW503J
C4 C5 C6	Same as C3 Not used	A-V-C by pass		
C7	Capacitor, fixed, 5.75 \pm 0.75 mmfd., 500 V. D-C working, temp. coeff. -0.00075 mmfd./mmfd./ degree C., ceramic dielectric	Cathode by-pass for tube V1		
C8 C9 C10	Capacitor, fixed, 0.25 mfd. -10 + 40%, 400 V. D-C working, paper dielectric	Additional coupling between tubes V1 and V2 on Band 4	CRL	47A005
C11	Capacitor, fixed, 0.1 mfd. -10 + 40%, 400 V. D-C working, paper dielectric	Screen by-pass for tube V1	SP	46AV254J
C12 C13 C14	Capacitor, fixed, 0.02 mfd. -10 + 40%, 400 V. D-C working, paper dielectric	Over-load bias by-pass Cathode by-pass for tube V2 Screen by-pass for tube V2	SP	46AV104J
C15 C16 C17	Same as C11 Same as C2 Same as C7	A-V-C by-pass for tube V3	SP	46AW203J
		Cathode by-pass for tube V3 Screen by-pass for tube V3 D-C blocking capacitor between electrical ground and chassis A-V-C by-pass for tube V4 Cathode by-pass for tube V4 Screen by-pass for tube V4		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
C18	Capacitor, fixed, 10 mmfd. $\pm 10\%$, 500 V. D-C working, temp. coeff. - 0.00055 mmfd./mmfd. / degree C, ceramic dielectric	Coupling between tubes V ₆ and V ₅	CRL	47A006
C19	Capacitor, fixed, 100 mmfd., $\pm 20\%$, 500 V. D-C working, mica dielectric	R-F by-pass at diode load	ASA	CM20A101M
C20	Same as C19	R-F by-pass at diode load		
C21	Same as C11	Audio coupling between diode load and triode section of tube V ₅		
C22	Capacitor, fixed, 10 mfd. $-10 \pm 65\%$, 25 V. D-C working, electrolytic, type PR-25	Cathode by-pass tube V ₅	A	42A033
C23	Same as C3	Plate decoupling for tube V ₅		
C24	Capacitor, fixed, 270 mmfd. $\pm 10\%$, 500 V. D-C working, mica dielectric	R-F by-pass in plate circuit of tube V ₅	ASA	CM20A271K
C25	Same as C3	Audio coupling between tubes V ₅ and V ₇		
C26	Same as C2	High frequency audio shunt in TONE CONTROL circuit		
C27	Capacitor, fixed, 0.005 mfd. $-10 + 40\%$, 600 V. D-C working, paper dielectric	Plate by-pass for tube V ₇	SP	46AZ502J
C28	Capacitor, fixed, 0.01 mfd. $-10 + 40\%$, 400 V. D-C working, paper dielectric, type 484	Feed back coupling for tube V ₆	A	46AW103J
C29	Capacitor, fixed, 250 mmfd. $\pm 10\%$, mica dielectric, part of transformer T ₅ . Shown for reference only	Grid bias by-pass for tube V ₆		
C30	Capacitor, fixed, 200 mmfd. $\pm 10\%$, silver mica dielectric, part of transformer T ₅ . Shown for reference only	Fixed capacitor to tune transformer T ₅		
C31	Capacitor, variable, min. cap. 3 mmfd., max. cap. 8.3 mmfd., air dielectric, ceramic insulation, type series 22.	Variable capacitor tuning transformer T ₅	RC	48A108
C32	Capacitor, fixed, 3 unit assembly; units #1 and #2 each 40 mfd. 150 V. D-C working, electrolytic (C ₃₂ and C ₃₃); unit #3 is 30 mfd. 150 V. D-C working (C ₃₅), type D6388	<div> <div>Output filter capacitor for plate voltage supply</div> <div>Input filter capacitor for plate voltage supply</div> </div>		
C33	Same as C3			
C34	Capacitor, unit #3 of 3 unit assembly, refer to description for C ₃₂ and C ₃₃	Power line filter by-pass		
C35		Output filter capacitor for plate and screen voltage supply for tube V ₂	SP	42A038

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
C ₃₆	Same as C ₁₉	Oscillator grid coupling		
C ₃₇	Capacitor, fixed, 2200 mmfd. $\pm 10\%$, 500 V. D-C working, mica dielectric	D-C blocking capacitor in oscillator plate circuit	ASA	CM30A202K
C ₃₈	Capacitor, adjustable, min. cap. 1 mmfd., max. cap. 12 mmfd., air dielectric, mica filled bakelite insulation, type 22-5230	Padding capacitor for secondary of transformer T ₁₄	MN	48A031
C ₃₉	Capacitor, adjustable, part of dual unit, nominal capacity 1300 mmfd., 500 V. D-C working, mica dielectric, compression type adjustment, ceramic insulation, refer to C ₄₁	Padding capacitor for secondary of transformer T ₁₅	UE	44A069
C ₄₀	Capacitor, adjustable, min. cap. 183 mmfd., max. cap. 846 mmfd., 500 V. D-C working, mica dielectric, compression type adjustment, ceramic insulation, special	Padding capacitor for secondary of transformer T ₁₆	UE	44A070
C ₄₁	Capacitor part of dual unit, nominal capacity 110 mmfd., 500 V. D-C working, refer to C ₃₉	Padding capacitor for secondary of transformer T ₁₇	UE	44A069
C ₄₂	Capacitor, fixed, 0.1 mfd. $-10 + 40\%$, 200 V. D-C working, paper dielectric	R-F gain by-pass	SP	46AT104J
C ₄₃	Not used			
C ₄₄	Not used			
C ₄₅	Capacitor, fixed, 26 mmfd. $\pm 10\%$, 500 V. D-C working, temp. coeff. -0.00075 mmfd./mmfd./degree C., ceramic dielectric	Fixed padding capacitor for secondary of transformer T ₁₄	CRL	47A036
C ₄₆ ^A	Capacitor, adjustable; 4 unit assembly; unit #1 effective capacity 6 mmfd. (C _{46C}), unit #2 effective capacity 6 mmfd. (C _{46D}), unit #3 effective capacity 10 mmfd. (C _{46A}), unit #4 effective capacity 10 mmfd. (C _{46B}), mica dielectric, ceramic insulation, heavy copper bracket, special	Trimmer for secondary of transformer T ₆	UE	44A071
C _{46B}		Trimmer for secondary of transformer T ₇		
C _{46C}		Trimmer for secondary of transformer T ₈		
C _{46D}		Trimmer for secondary of transformer T ₉		
C _{47A}	Same as C ₄₆ ; C _{47A} same as C _{46A} ; C _{47B} same as C _{46B} ; C _{47C} same as C _{46C} ; C _{47D} same as C _{46D}	Trimmer for secondary of transformer T ₁₀		
C _{47B}		Trimmer for secondary of transformer T ₁₁		
C _{47C}		Trimmer for secondary of transformer T ₁₂		
C _{47D}		Trimmer for secondary of transformer T ₁₃		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
C48A	Capacitor, adjustable, 4 unit assembly; unit #1 effective capacity 35 mmfd. (C _{48C}), unit #2 effective capacity 35 mmfd. (C _{48D}), unit #3 effective capacity 8 mmfd. (C _{48A}), unit #4 effective capacity, 25 mmfd. (C _{48B}); mica dielectric, ceramic insulation, heavy copper bracket, special	Trimmer for secondary of transformer T ₁₄ Trimmer for secondary of transformer T ₁₅ Trimmer for secondary of transformer T ₁₆ Trimmer for secondary of transformer T ₁₇	UE	44A072
C48B				
C48C				
C48D				
C49	Capacitor, fixed, 100 mfd. \pm 10%, 500 V. D-C working, mica dielectric	Resonating capacitor for primary of transformer T ₁	ASA	CM25E101K
C50	Same as C ₄₉	Resonating capacitor for secondary of transformer T ₁		
C51	Not used			
C52	Same as C ₃			
C53	Same as C ₇			
C54	Same as C ₄₉	Plate return for tube V ₂		
C55	Same as C ₄₉	D-C blocking capacitor between electrical ground and chassis		
C56	Same as C ₄₉	Resonating capacitor for primary of transformer T ₂		
C57	Same as C ₄₉	Resonating capacitor for secondary of transformer T ₂		
		Resonating capacitor for primary of transformer T ₃		
		Resonating capacitor for secondary of transformer T ₃		
T ₁	Transformer, I-F, 1600 KC., primary and secondary tuned by adjustable iron core, fixed trimmers of 100 mmfd., secondary winding tapped for grid connection, special	Coupling between tubes V ₂ and V ₃	SWI	50B137
T ₂	Same as T ₁ , except A-V-C lead is 1" longer	Coupling between tubes V ₃ and V ₄	SWI	50C090
T ₃	Transformer, I-F, 1600 KC. primary and secondary tuned by adjustable iron core, fixed trimmers of 100 mmfd., special	Coupling between tubes V ₄ and V ₅	SWI	50C091
T ₄	Transformer, A-F, primary impedance 2000 ohm, secondary impedance 50 ohm tapped at 4 ohm, potted, special	Coupling between audio amplifier tube V ₇ and phones or speaker	QN	55B013

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
T ₅	Transformer, R-F, 1600 KC, variable iron core adjustment, fixed 200 mmfd. trimmer, includes 250 mmfd. fixed capacitor in parallel with a 50,000 ohm resistor, connected in series with secondary start, secondary finish and-primary start have common terminal, special	Beat frequency oscillator transformer	SWI	54B017
T ₆	Transformer, R-F, range 110-418 KC., air core, special	Coupling between antenna and r-f stage for Band #1	SWI	51B313
T ₇	Transformer, R-F, range 390-1500 KC, air core, special	Coupling between antenna and r-f stage for Band #2	SWI	51B316
T ₈	Transformer, R-F, range 1.7-5.9 megacycles, air core, special	Coupling between antenna and r-f stage for Band #3	SWI	51B319
T ₉	Transformer, R-F, range 5.1-19.4 megacycles, air core, special	Coupling between antenna and r-f stage for Band #4	SWI	51B322
T ₁₀	Transformer, R-F, range 110-418 KC; air core, special	Coupling between r-f stage and converter stage for Band #1	SWI	51B314
T ₁₁	Transformer, R-F, range 390-1500 KC, air core, special	Coupling between r-f stage and converter stage for Band #2	SWI	51B317
T ₁₂	Transformer, R-F, range 1.7-5.9 megacycles, air core, special	Coupling between r-f stage and converter stage for Band #3	SWI	51B320
T ₁₃	Transformer, R-F, range 5.1-19.4 megacycles, air core, special	Coupling between r-f and stage converter stage for Band #4	SWI	51B323
T ₁₄	Transformer, R-F, range 110-418 KC, air core, special	Oscillator stage transformer for Band #1	SWI	51B315
T ₁₅	Transformer, R-F, range 390-1500 KC, air core, special	Oscillator stage transformer for Band #2	SWI	51B318
T ₁₆	Transformer, R-F, range 1.7-5.9 megacycles, air core, special	Oscillator stage transformer for Band #3	SWI	51B321
T ₁₇	Transformer, R-F, range 5.1-19.4 megacycles, air core, special	Oscillator stage transformer for Band #4	SWI	51B324
L ₁	Inductor, radio - frequency coil, air core, universal winding on bakelite base	Antenna loading coil for Band #1	SWI	53B011
L ₂	Inductor, R-F, inductance 10 millihenries \pm 10%, distributed capacity 7 mmfd., air core, universal winding on XXP bakelite base, special	R-F filter inductance for tube V ₂	SWI	53A005

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
L ₃	Same as L ₂	R-F filter inductance for tube V ₁		
CH ₁	Inductor, filter, 4 henries @ 60 milliamperes, 200 ohm d-c resistance, wax dipped, type 1B51	Part of high-voltage low pass filter	GT	56B002
SW ₁	Switch, SPST, toggle, bakelite insulation, mounts by 15/32-32 brass bushing 13/32" deep, type 20994BP	A.V.C. switch	HH	60A126
SW ₂	Same as SW ₁	B.F.O. switch		
SW ₃	Same as SW ₁	SEND-REC. switch		
SW ₄	Switch, SPST, toggle action, on rear of resistor R ₂₃	Power switch	CT	25C040
SW _{5A}	Switch, rotary selector, 3 section, 4 position, shorting type contacts, bakelite wafers individually mounted to coil shield partitions, type B-111196	Band selector for primaries of transformers T ₆ , T ₇ , T ₈ and T ₉ Band selector for secondaries of transformers T ₆ , T ₇ , T ₈ and T ₉ Band selector for primaries of transformers T ₁₀ , T ₁₁ , T ₁₂ and T ₁₃ Band selector for secondaries of transformers T ₁₀ , T ₁₁ , T ₁₂ and T ₁₃ Band selector for primaries of transformers T ₁₄ , T ₁₅ , T ₁₆ and T ₁₇ Band selector for secondaries of transformers T ₁₄ , T ₁₅ , T ₁₆ and T ₁₇	MA	62B004
SW _{5B}				
SW _{5C}				
SW _{5D}				
SW _{5E}				
SW _{5F}				
J ₁	Jack, phone, switching action, one make-one break, bakelite insulation, 3/8-32 brass bushing 1/2" long, type ST-687	Phone jack	U	36B004
F ₁	Fuse, 2 amperes @ 250 V., glass enclosed, 3AG, type 1042	Line protection	LF	39A307
F ₂	Same as F ₁	Line protection		
PL ₁	Plug and line cord assembly, 2 conductor #18 stranded copper, rubber covered, partially bonded to adjacent conductor jacket, 6 ft. long with molded rubber plug at one end, special	Connects receiver to source of power	E	87A078

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
LM ₁	Lamp, pilot, 6-8 volt @ 150 milliamperes, bayonet base, type 47	Bandsread dial illumination	GE	39A004
LM ₂	Same as LM ₁	Main tuning dial illumination		
V ₁	Tube, triode-grid super control amplifier, type 6SK7	R-F amplifier	RCA	90X6SK7
V ₂	Tube, triode-hexode converter, type 6K8	Converter and oscillator		
V ₃	Same as V ₁	1st I-F amplifier	RCA	90X6K8
V ₄	Same as V ₁	2nd I-F amplifier		
V ₅	Tube, duplex-diode, high-mu triode, type 6SQ7	Detector, A-F amplifier	RCA	90X6SQ7
V ₆	Tube, detector amplifier triode, type 6J5	Beat frequency oscillator	RCA	90X6J5
V ₇	Tube, beam power amplifier, type 25L6	A-F power amplifier	RCA	90X25L6
V ₈	Tube, rectifier-doubler, type 25Z5	Rectifier	RCA	90X25Z5

INDEX TO PARTS MANUFACTURERS

SYMBOL	MANUFACTURER	SYMBOL	MANUFACTURER
A	Aerovox Corp. New Bedford, Mass.	MN	Meissner Mfg. Co. Mt. Carmel, Illinois
ASA	Any manufacturer meeting the applicable American Standard Association specification	MT	The Muter Co. Chicago, Illinois
CRL	Centralab Milwaukee, Wis.	OM	Oak Mfg. Co. Chicago, Illinois
CT	Chicago Telephone & Supply Co. Elkhart, Indiana	QN	Quam-Nichols Co. Chicago, Illinois
E	Essex Wire Co. Chicago, Illinois	RC	Radio Condenser Corp. Camden, N.J.
GE	General Electric Co. Schenectady, N.Y.	RCA	R.C.A. Mfg. Co. Harrison, N.J.
GT	General Transformer Corp. Chicago, Illinois	SP	Sprague Specialties Co. North Adams, Mass.
HH	Hart & Hegeman Elec. & Co. Hartford, Conn.	SWI	S.W. Inductor Chicago, Illinois
LF	Littlefuse Inc. Chicago, Illinois	U	Utah Radio Products Co. Chicago, Illinois
MA	P.R. Mallory & Co. Indianapolis, Indiana	UE	Underwood Elec. Chicago, Illinois

MODEL S-22R
Skyrider Marine

THE HALLICRAFTERS INC.

ALIGNMENT PROCEDURE

ALIGNMENT INSTRUCTIONS:

- Equipment needed for aligning:
1 - An all wave signal generator which will provide an accurately calibrated signal at the test frequencies indicated.
- 2 - Output indicating meter connected to a headphone plug, and inserted in the headphone jack.
- 3 - Non-metallic screw driver.
- 4 - Dummy antenna of .002 mfd. condenser and 400 ohm resistor.

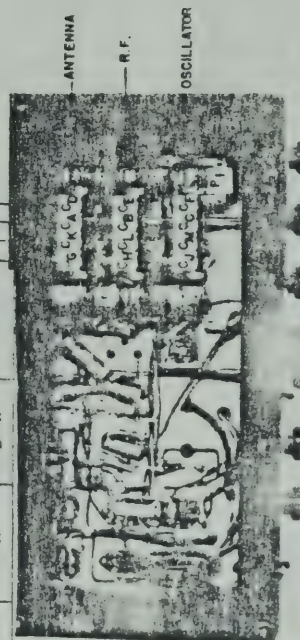
SETTING OF CONTROLS PRIOR TO ALIGNMENT - IF AND RF.

- 1 - Tune control at maximum high frequency position.
- 2 - AVC switch OFF.
- 3 - BFO switch OFF.
- 4 - RF Gain at maximum.
- 5 - AF gain at maximum.

R.F. ALIGNMENT

Connect hot lead of Signal Generator to A₁ through dummy Antenna shown in Table.
Leave jumper connected between A₂ and G. Ground of Generator to Chassis.

BAND	REC. DIAL SETTING	SIG. GEN. FREQ.	DUMMY ANTENNA	HIGH FREQUENCY END ADJUST OSC WITH	ADJUST TRIMMERS WITH	LOW FREQUENCY END ADJUST OSCILLATOR WITH
1	125 Kc	125 Kc	.002 mfd	-----	-----	P ₁
	350 Kc	350 Kc	.002 mfd	C _C	C _A -C _B	-----
2	450 Kc	450 Kc	.002 mfd	-----	-----	P ₂
	1400 Kc	1400 Kc	.002 mfd	-----	C _E -C _D	-----
3	2 Mc	2 Mc	400 Ohm	-----	-----	P ₃
	4.5 Mc	4.5 Mc	400 Ohm	C _J	C _G -C _H	-----
4	7 Mc	7 Mc	400 Ohm	-----	-----	P ₄
	15 Mc	15 Mc	400 Ohm	C _{II}	C _I -C _K	-----

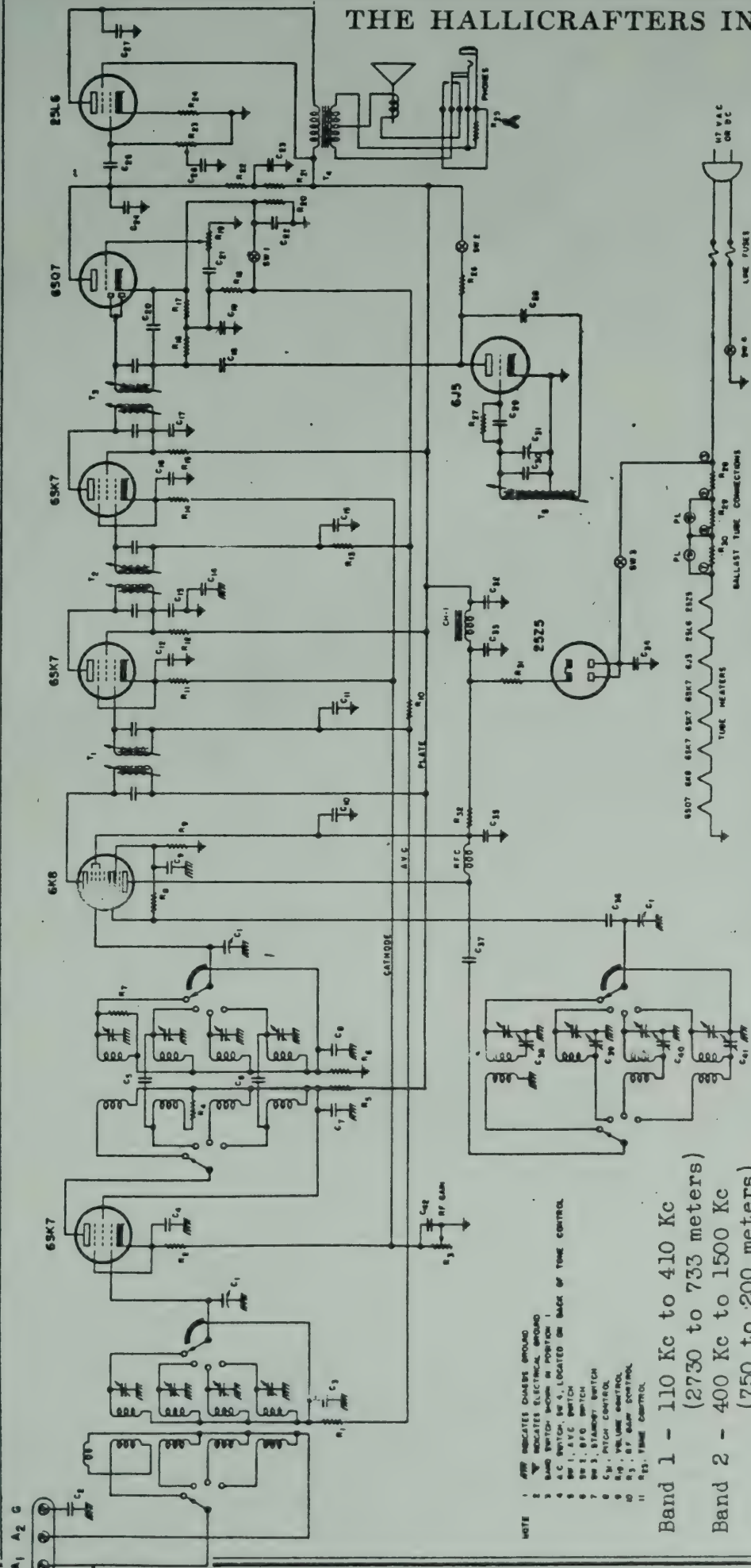


NO.	VALUE	VOLTAGE OR PURPOSE	TYPE	NO.	VALUE	VOLTAGE OR PURPOSE	TYPE
C ₁	Tuning Condenser	563 mmfd	per section	C ₂₆	.01 mfd	400 V.	Paper
C ₂	.01 mfd	400 V.	Paper	C ₂₇	.005 mfd	600 V.	Paper
C ₃	.05 mfd	400 V.	Paper	C ₂₈	.01 mfd	400 V.	Paper
C ₄	.05 mfd	400 V.	Paper	C ₂₉	250 mmfd		Mica
C ₅	5 mmf		Ceramic	C ₃₀	200 mmfd		Mica
C ₆	5 mmf		Ceramic	C ₃₁	5 mmf BFO Pitch Con.	Air Variable	
C ₇	.25 mfd	400 V.	Paper	C ₃₂	40 mfd	150 V.	Electrolytic
C ₈	.05 mfd	400 V.	Paper	C ₃₃	40 mfd	150 V.	Electrolytic
C ₉	.05 mfd	400 V.	Paper	C ₃₄	.05 mfd	400 V.	Paper
C ₁₀	.1 mfd	400 V.	Paper	C ₃₅	30 mfd	150 V.	Electrolytic
C ₁₁	.02 mfd	400 V.	Paper	C ₃₆	100 mmfd		Mica
C ₁₂	.02 mfd	400 V.	Paper	C ₃₇	2000 mmfd		Mica
C ₁₃	.01 mfd	400 V.	Paper	C ₃₈	32 mmfd Band 1 Pad		
C ₁₄	.25 mfd	400 V.	Paper	C ₃₉	110 mmfd Band 2 Pad		
C ₁₅	.02 mfd	400 V.	Paper	C ₄₀	480 mmfd Band 3 Pad		
C ₁₆	.02 mfd	400 V.	Paper	C ₄₁	1500 mmfd Band 4 Pad		
C ₁₇	.01 mfd	400 V.	Paper	C ₄₂	.1 mfd	200 V.	Paper
C ₁₈	10 mmf		Ceramic				
C ₁₉	100 mmf		Mica				
C ₂₀	100 mmf		Mica				
C ₂₁	.02 mfd	400 V.	Paper				
C ₂₂	10 mf	25 V.	Electrolytic				
C ₂₃	.05 mfd	400 V.	Paper				
C ₂₄	250 mfd		Mica				
C ₂₅	.05 mfd	400 V.	Paper				
C ₂₆	.05 mfd	400 V.	Paper				
C ₂₇	.01 mfd	400 V.	Paper				
C ₂₈	.01 mfd	400 V.	Paper				
C ₂₉	.01 mfd	400 V.	Paper				
C ₃₀	.01 mfd	400 V.	Paper				
C ₃₁	.01 mfd	400 V.	Paper				
C ₃₂	.01 mfd	400 V.	Paper				
C ₃₃	.01 mfd	400 V.	Paper				
C ₃₄	.01 mfd	400 V.	Paper				
C ₃₅	.01 mfd	400 V.	Paper				
C ₃₆	.01 mfd	400 V.	Paper				
C ₃₇	.01 mfd	400 V.	Paper				
C ₃₈	.01 mfd	400 V.	Paper				
C ₃₉	.01 mfd	400 V.	Paper				
C ₄₀	.01 mfd	400 V.	Paper				
C ₄₁	.01 mfd	400 V.	Paper				
C ₄₂	.01 mfd	400 V.	Paper				
C ₄₃	.01 mfd	400 V.	Paper				
C ₄₄	.01 mfd	400 V.	Paper				
C ₄₅	.01 mfd	400 V.	Paper				
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C ₄₉	.01 mfd	400 V.	Paper				
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C ₅₃	.01 mfd	400 V.	Paper				
C ₅₄	.01 mfd	400 V.	Paper				
C ₅₅	.01 mfd	400 V.	Paper				
C ₅₆	.01 mfd	400 V.	Paper				
C ₅₇	.01 mfd	400 V.	Paper				
C ₅₈	.01 mfd	400 V.	Paper				
C ₅₉	.01 mfd	400 V.	Paper				
C ₆₀	.01 mfd	400 V.	Paper				
C ₆₁	.01 mfd	400 V.	Paper				
C ₆₂	.01 mfd	400 V.	Paper				
C ₆₃	.01 mfd	400 V.	Paper				
C ₆₄	.01 mfd	400 V.	Paper				
C ₆₅	.01 mfd	400 V.	Paper				
C ₆₆	.01 mfd	400 V.	Paper				
C ₆₇	.01 mfd	400 V.	Paper				
C ₆₈	.01 mfd	400 V.	Paper				
C ₆₉	.01 mfd	400 V.	Paper				
C ₇₀	.01 mfd	400 V.	Paper				
C ₇₁	.01 mfd	400 V.	Paper				
C ₇₂	.01 mfd	400 V.	Paper				
C ₇₃	.01 mfd	400 V.	Paper				
C ₇₄	.01 mfd	400 V.	Paper				
C ₇₅	.01 mfd	400 V.	Paper				
C ₇₆	.01 mfd	400 V.	Paper				
C ₇₇	.01 mfd	400 V.	Paper				
C ₇₈	.01 mfd	400 V.	Paper				
C ₇₉	.01 mfd	400 V.	Paper				
C ₈₀	.01 mfd	400 V.	Paper				
C ₈₁	.01 mfd	400 V.	Paper				
C ₈₂	.01 mfd	400 V.	Paper				
C ₈₃	.01 mfd	400 V.	Paper				
C ₈₄	.01 mfd	400 V.	Paper				
C ₈₅	.01 mfd	400 V.	Paper				
C ₈₆	.01 mfd	400 V.	Paper				
C ₈₇	.01 mfd	400 V.	Paper				
C ₈₈	.01 mfd	400 V.	Paper				
C ₈₉	.01 mfd	400 V.	Paper				
C ₉₀	.01 mfd	400 V.	Paper				
C ₉₁	.01 mfd	400 V.	Paper				
C ₉₂	.01 mfd	400 V.	Paper				
C ₉₃	.01 mfd	400 V.	Paper				
C ₉₄	.01 mfd	400 V.	Paper				
C ₉₅	.01 mfd	400 V.	Paper				
C ₉₆	.01 mfd	400 V.	Paper				
C ₉₇	.01 mfd	400 V.	Paper				
C ₉₈	.01 mfd	400 V.	Paper				
C ₉₉	.01 mfd	400 V.	Paper				
C ₁₀₀	.01 mfd	400 V.	Paper				

CONDENSERS PLUG-IN BALLAST
C₃₂ C₃₃ C₃₅ / R₂₇ R₂₈ R₂₉



THE HALLCRAFTERS INC.

MODEL S-22R
Skyrider Marine


If an inverted "L" antenna is used, connect lead-in to A₁ and leave the jumper between A₂ and G. If an "all wave" doubtlet is used, connect the transmission line to A₁ and A₂ with the jumper removed from A₂ and G. A separate antenna may be used for one s-w band; use a half-wave antenna whose length can be calculated from

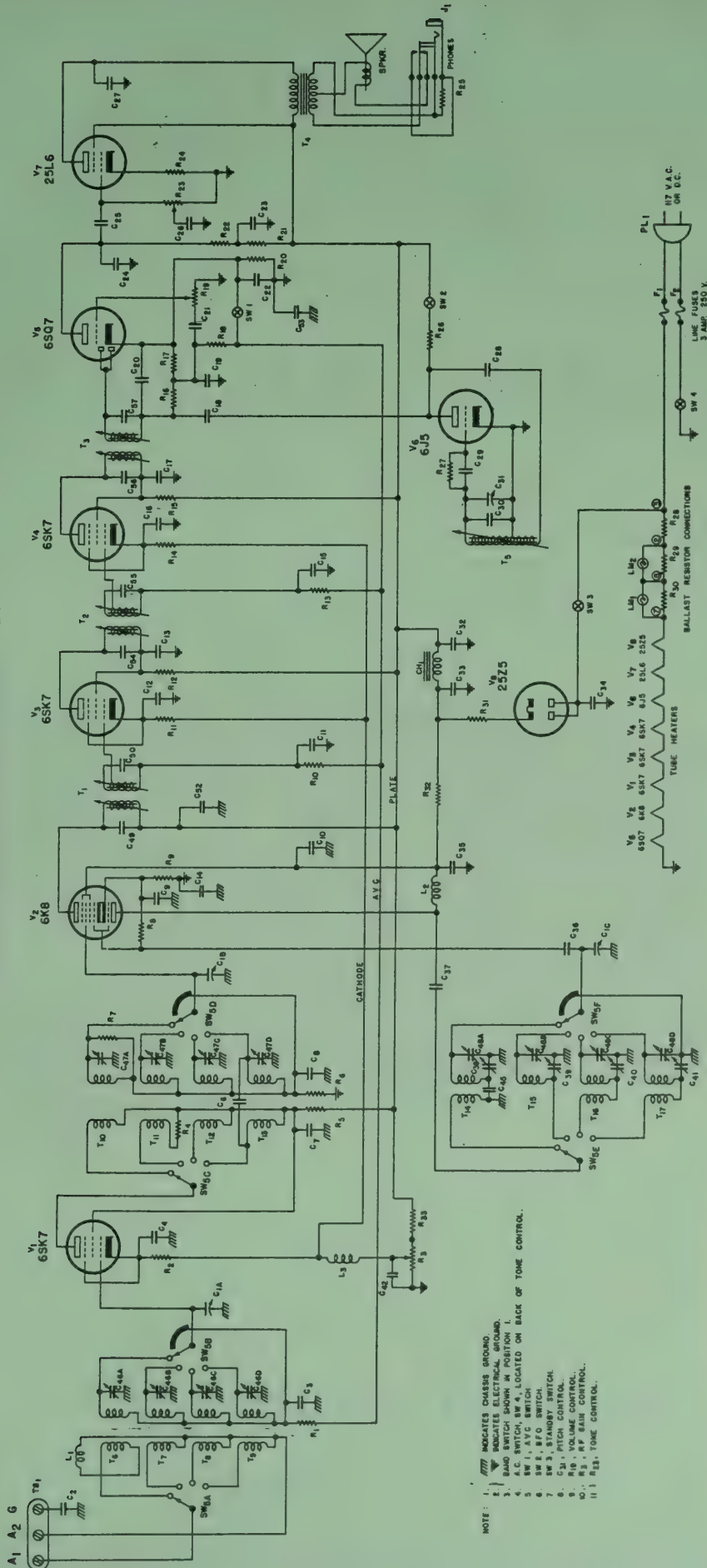
463

Length in feet = -----
Frequency in megacycles

NOTE: The SKYRIDER MARINE Model S22R is an AC-DC receiver which operates on 110/125 volts only. Should operation be desired from a lower voltage DC source, an external converter delivering 110/125 volts should be used. A 220 volt DC Model S22R is available on order and uses a special line cord with dropping resistor.

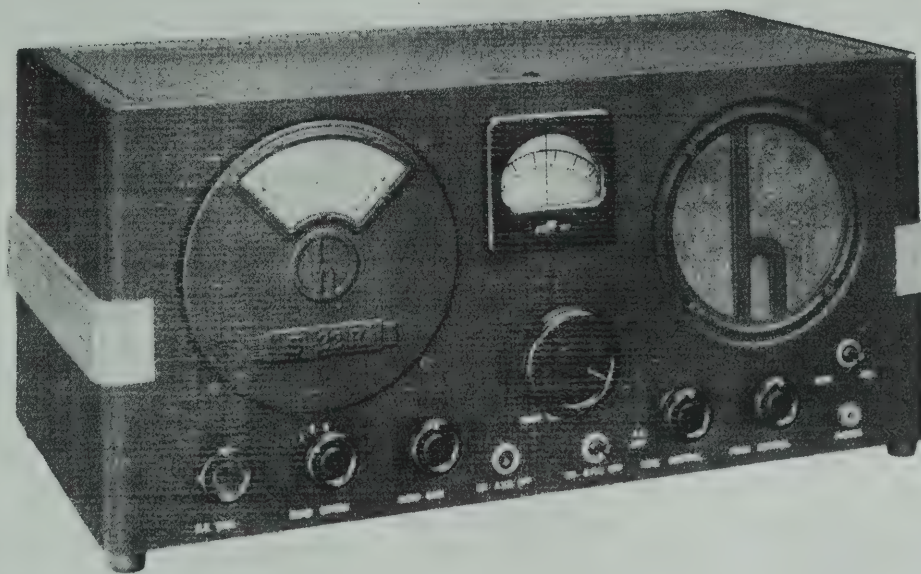
the hallicrafters co.

SCHEMATIC DIAGRAM—SKYRIDER MARINE—MODEL S-22 R



- NOTE:
1. INDICATES CHASSIS GROUND.
 2. INDICATES ELECTRICAL GROUND.
 3. BAND SWITCH, SW 4, LOCATED ON BACK OF TONE CONTROL.
 4. A.C. SWITCH, SW 4, LOCATED ON BACK OF TONE CONTROL.
 5. 1. VOLUME CONTROL.
 6. SW 3, STANDBY SWITCH.
 7. SW 3, STANDBY SWITCH.
 8. C10, PITCH CONTROL.
 9. R10, VOLUME CONTROL.
 10. R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100.
 11. R23, TONE CONTROL.

OPERATING
ALIGNMENT and SERVICING
INSTRUCTIONS
for the
SKYRIDER MARINE
MODEL S-22-R



the hallicrafters *co.*

CHICAGO U.S.A.

OPERATING AND ALIGNMENT INSTRUCTIONS

SKYRIDER MARINE MODEL S22R

INSTALLATION: - It is recommended that, upon receipt, the carton and then the receiver be carefully examined for any damage which might have occurred in transit. File claim with the Carrier immediately should any sign of damage be apparent.

NOTE: The SKYRIDER MARINE Model S22R is an AC-DC receiver which operates on 110/125 volts only. Should operation be desired from a lower voltage DC source, an external converter delivering 110/125 volts should be used. A 220 volt DC Model S22R is available on order and uses a special line cord with dropping resistor.

Cabinet Dimensions: Length $18\frac{1}{2}$ " Depth $9\frac{1}{4}$ " Height $8\frac{1}{2}$ ". The receiver can be placed in any location convenient to its power source and antenna. Inasmuch as the Model S22R chassis is at the same ground potential as the cabinet the possibility of a short between chassis and cabinet is removed.

ANTENNA: - On the rear chassis apron will be found the Antenna Strip. A conventional Marconi, inverted "L", antenna should be connected to the A_1 terminal and the jumper between A_2 and G left connected. In order to get the most satisfactory pickup throughout the low frequency tuning range of the receiver, it is advisable to use the longest piece of wire for an antenna that it is possible to install. This same antenna will also perform satisfactorily on the higher frequencies. Should a commercially available "all wave" doublet antenna be used, the two wire transmission line from the flat top or matching transformer should be connected to terminals A_1 and A_2 with the jumper removed from A_2 and G. Should you wish to have a separate antenna for some one short wave frequency or band, a half wave antenna cut for that frequency will be an excellent performer. The following formula will give the length of the $1/2$ wavelength antenna depending on the desired frequency.

Length in feet $\frac{468}{\text{frequency in megacycles}}$ or
for example, a half wave 40 meter antenna would be $\frac{468}{7} = 66.8$ feet long. A good

ground, if it aids reception, should be connected at the G terminal.

OPERATION: - After connecting an aerial to the receiver, plug the power cord into the power socket. Now turn the control marked "Tone" to the right. Power is now connected to the receiver as will be indicated by the dial light behind the translucent dials. Allow a few moments for the tubes in the receiver to reach operating temperature.

Place the band switch in position #2 for standard broadcast coverage. The frequency range of the receiver by bands is as follows:

- Band 1 - 110 Kc to 410 Kc
(2730 to 733 meters)
- Band 2 - 400 Kc to 1500 Kc
(750 to 200 meters)
- Band 3 - 1.7 Mc to 5.9 Mc
(177 to 51 meters)
- Band 4 - 5.3 Mc to 18 Mc
(56 to 16.7 meters)

The sensitivity of the receiver is adjusted by the "RF Gain" control.

The "AF Gain" control adjusts the volume of both the loud speaker and headphone circuits. **NOTE:** When receiving telephone signals, the AVC or automatic volume control switch should preferably be ON. The "RF Gain" is then rotated clockwise as far as it will go, or the position of maximum sensitivity. The signal is then adjusted for a level of volume to suit your particular requirements with the A. F. Gain control. With the AVC switch OFF, the sensitivity of the receiver should be manually controlled by suitable adjustment of the RF Gain control or the receiver will block or overload. After you have familiarized yourself with the operation of the receiver you will determine the proper settings of these controls for the most favorable signal to noise ratio.

The BFO switch places the beat frequency oscillator in operation when snapped to the ON position. Adjustment of the knob

OPERATING AND ALIGNMENT INSTRUCTIONS

SKYRIDER MARINE MODEL S22R

INSTALLATION: - It is recommended that, upon receipt, the carton and then the receiver be carefully examined for any damage which might have occurred in transit. File claim with the Carrier immediately should any sign of damage be apparent.

NOTE: The SKYRIDER MARINE Model S22R is an AC-DC receiver which operates on 110/125 volts only. Should operation be desired from a lower voltage DC source, an external converter delivering 110/125 volts should be used. A 220 volt DC Model S22R is available on order and uses a special line cord with dropping resistor.

Cabinet Dimensions: Length $18\frac{1}{2}$ " Depth $9\frac{1}{4}$ " Height $8\frac{1}{2}$ ". The receiver can be placed in any location convenient to its power source and antenna. Inasmuch as the Model S22R chassis is at the same ground potential as the cabinet the possibility of a short between chassis and cabinet is removed.

ANTENNA: - On the rear chassis apron will be found the Antenna Strip. A conventional Marconi, inverted "L", antenna should be connected to the A_1 terminal and the jumper between A_2 and G left connected. In order to get the most satisfactory pickup throughout the low frequency tuning range of the receiver, it is advisable to use the longest piece of wire for an antenna that it is possible to install. This same antenna will also perform satisfactorily on the higher frequencies. Should a commercially available "all wave" doublet antenna be used, the two wire transmission line from the flat top or matching transformer should be connected to terminals A_1 and A_2 with the jumper removed from A_2 and G. Should you wish to have a separate antenna for some one short wave frequency or band, a half wave antenna cut for that frequency will be an excellent performer. The following formula will give the length of the $1/2$ wavelength antenna depending on the desired frequency.

Length in feet $\frac{468}{\text{frequency in megacycles}}$ or
for example, a half wave 40 meter antenna would be $\frac{468}{7} = 66.8$ feet long. A good

ground, if it aids reception, should be connected at the G terminal.

OPERATION: - After connecting an aerial to the receiver, plug the power cord into the power socket. Now turn the control marked "Tone" to the right. Power is now connected to the receiver as will be indicated by the dial light behind the translucent dials. Allow a few moments for the tubes in the receiver to reach operating temperature.

Place the band switch in position #2 for standard broadcast coverage. The frequency range of the receiver by bands is as follows:

- Band 1 - 110 Kc to 410 Kc
(2730 to 733 meters)
- Band 2 - 400 Kc to 1500 Kc
(750 to 200 meters)
- Band 3 - 1.7 Mc to 5.9 Mc
(177 to 51 meters)
- Band 4 - 5.3 Mc to 18 Mc
(56 to 16.7 meters)

The sensitivity of the receiver is adjusted by the "RF Gain" control.

The "AF Gain" control adjusts the volume of both the loud speaker and headphone circuits. **NOTE:** When receiving telephone signals, the AVC or automatic volume control switch should preferably be ON. The "RF Gain" is then rotated clockwise as far as it will go, or the position of maximum sensitivity. The signal is then adjusted for a level of volume to suit your particular requirements with the A.F. Gain control. With the AVC switch OFF, the sensitivity of the receiver should be manually controlled by suitable adjustment of the RF Gain control or the receiver will block or overload. After you have familiarized yourself with the operation of the receiver you will determine the proper settings of these controls for the most favorable signal to noise ratio.

The BFO switch places the beat frequency oscillator in operation when snapped to the ON position. Adjustment of the knob

marked "Pitch Control" will enable you to change the pitch of the beat note to one most pleasing to you. The "Send Receive" switch, in the SEND position, removes plate voltage from the tubes in the receiver which makes it inoperative during a transmission or stand-by period.

Inasmuch as no direct current flows in the headphone circuit, crystal type headphones can be used. When headphones are plugged into the headphone jack, the speaker is

automatically disconnected.

NOTE: In keeping with the Underwriters recommendations the fuse block is mounted on the under side of the chassis. 250 volt 2 ampere replacement fuses can be installed only after the bottom plate has been removed from the receiver.

The Model S22R SKYRIDER Marine Receiver draws 50 watts at 117 volts 60 cycles A.C.

GUARANTEE

This receiver is guaranteed to be free from any defect in workmanship and material that may develop within a period of ninety (90) days from date of purchase, under the terms of the standard guarantee, as designated by the Radio Manufacturers Association. Any part or parts that prove defective within this period will be replaced without charge when subjected to examination at our factory, providing such defect, in our opinion, is due to faulty material or workmanship, and not caused by tampering, abuse or normal wear. All such adjustments to be made FOB the factory.

Should this receiver require any adjustments, your dealer or distributor has complete technical service information, or the factory will be glad to assist you in

any problem direct.

Should it be necessary to return any part or parts to the factory, a "Return Material Permit" must be obtained in advance by first writing the Adjustment Department, who will issue due authorization under the terms of the guarantee.

The Hallicrafters Co., reserves the right to make changes in design or add improvements to instruments manufactured by them, without incurring any obligation to install the same in any instrument previously purchased.

All Hallicrafters receivers are built under patents of Radio Corporation of America and Hazeltine Corporation.

ALIGNMENT PROCEDURE

ALIGNMENT INSTRUCTIONS:

Equipment needed for aligning:

- 1 - An all wave signal generator which will provide an accurately calibrated signal at the test frequencies indicated.
- 2 - Output indicating meter connected to a headphone plug, and inserted in the headphone jack.
- 3 - Non-metallic screw driver.
- 4 - Dummy antenna of .0002 mfd. condenser and 400 ohm resistor.

SETTING OF CONTROLS PRIOR TO ALIGNMENT - IF AND RF.

- 1 - Tone control at maximum high frequency position.
- 2 - AVC switch OFF.
- 3 - BFO switch OFF.
- 4 - RF Gain at maximum.
- 5 - AF Gain at maximum.

1600 Kc IF ALIGNMENT.

Tune receiver to 5,000 Kc with the band switch in #3 position.

Connect hot side of signal generator to 6K8 grid cap through .01 mfd. condenser - ground of generator to the chassis. Signal generator output - 1,600 Kc.

Adjust screws S1 to S6 inclusive on IF transformers T 1-2-3 for maximum gain.

BFO ADJUSTMENT - With a 1600 Kc signal being fed into the IF amplifier, and the BFO switch ON, place the Pitch Control with the white dot UP. Now adjust the screw S7 on the top of T5 for zero beat. Further adjustment of the Pitch Control from the front of the panel will enable you to vary the frequency of the beat note to your satisfaction.

R.F. ALIGNMENT

Connect hot Lead of Signal Generator to A_1 through dummy Antenna shown in Table.
Leave Jumper connected between A_2 and G. Ground of Generator to Chassis.

BAND	REC. DIAL SETTING	SIG. GEN. FREQ.	DUMMY ANTENNA	HIGH FREQUENCY END		LOW FREQUENCY END
				ADJUST OSC WITH	ADJUST TRIMMERS WITH	ADJUST OSCILLATOR WITH
1	125 Kc	125 Kc	.0002 mfd	-----	-----	P_1
	350 Kc	350 Kc	.0002 mfd	C_C	C_A-C_B	-----
2	450 Kc	450 Kc	.0002 mfd	-----	-----	P_2
	1400 Kc	1400 Kc	.0002 mfd	C_F	C_E-C_D	-----
3	2 Mc	2 Mc	400 Ohm	-----	-----	P_3
	4.5 Mc	4.5 Mc	400 Ohm	C_J	C_G-C_H	-----
4	7 Mc	7 Mc	400 Ohm	-----	-----	P_4
	15 Mc	15 Mc	400 Ohm	C_M	C_L-C_K	-----

ELECTROLYTIC

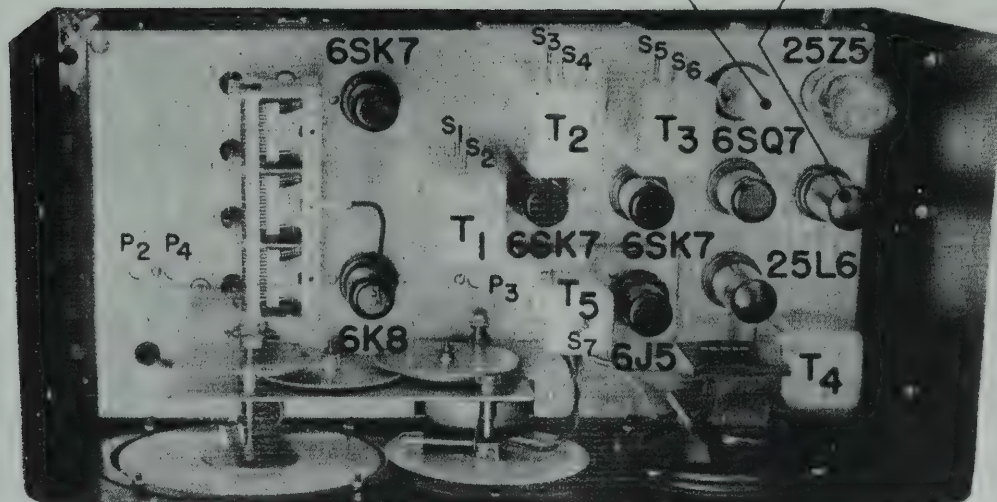
CONDENSERS

PLUG-IN BALLAST

C32-C33-C35

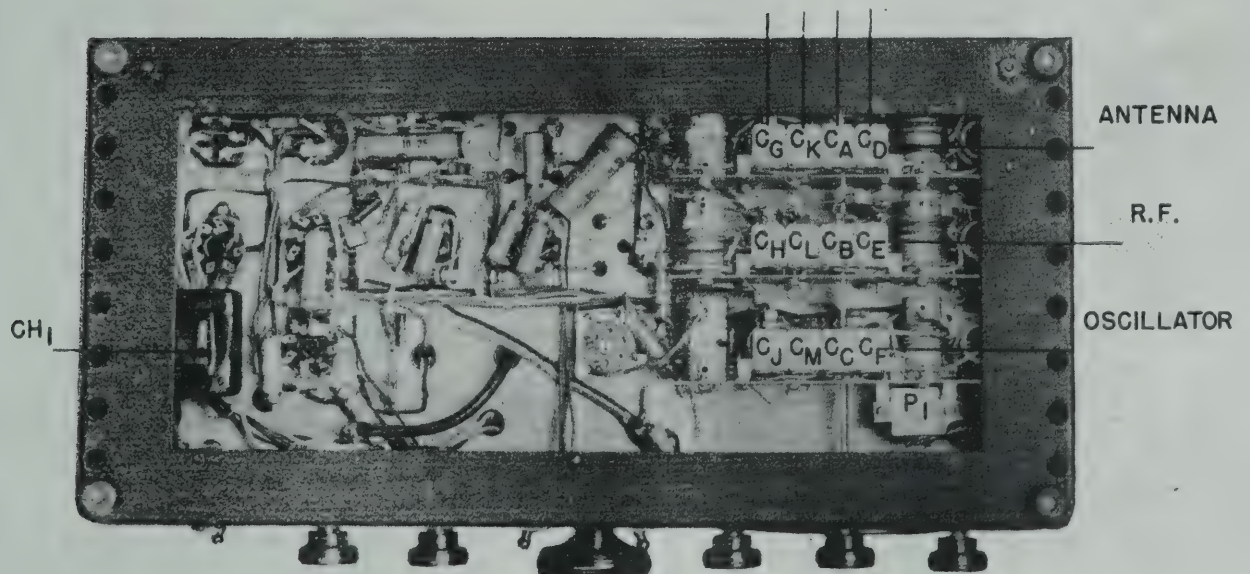
R28-R29-R30

GA₂A₁



BAND

3 4 1 2



REPLACEABLE PARTS LIST FOR S-22R RECEIVER

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
R ₁	Resistor, fixed, 100,000 ohm \pm 20%, $\frac{1}{2}$ watt, carbon	A-V-C decoupling	ASA	RC21AE104M
R ₂	Resistor, fixed, 330 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₁	ASA	RC21AE331K
R ₃	Resistor, variable, 10,000 ohm \pm 20%, carbon	R.F. GAIN control	CT	25C039
R ₄	Resistor, fixed, 470 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Voltage drop in plate of tube V ₁ for Band 2	ASA	RC21AE471K
R ₅	Resistor, fixed 1000 ohm \pm 20%, $\frac{1}{2}$ watt, carbon	Plate and screen decoupling for tube V ₁	ASA	RC21AE102M
R ₆	Same as R ₁	Overload bias		
R ₇	Same as R ₁	Secondary loading in transformer T ₁₀		
R ₈	Resistor, fixed, 47,000 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Grid return for oscillator section of tube V ₂	ASA	RC21AE473K
R ₉	Resistor, fixed, 390 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₂	ASA	RC21AE391K
R ₁₀	Same as R ₁	A-V-C decoupling for tube V ₃		
R ₁₁	Resistor, fixed, 220 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₃	ASA	RC21AE221K
R ₁₂	Same as R ₅	Plate and screen decoupling for tube V ₃		
R ₁₃	Same as R ₁	A-V-C decoupling for tube V ₄		
R ₁₄	Same as R ₉	Cathode bias for tube V ₄		
R ₁₅	Same as R ₅	Plate and screen decoupling for tube V ₄		
R ₁₆	Same as R ₁	Diode load for tube V ₅	ASA	RC21AE274K
R ₁₇	Resistor, fixed, 274,000 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Diode load for tube V ₅	ASA	RC21AE105M
R ₁₈	Resistor, fixed, 1 megohm \pm 20%, $\frac{1}{2}$ watt, carbon	A-V-C decoupling	CT	25C041
R ₁₉	Resistor, variable, 500,000 ohm \pm 20%, carbon	AUDIO GAIN control	ASA	RC21AE682K
R ₂₀	Resistor, fixed, 6,800 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Cathode bias for tube V ₅		
R ₂₁	Same as R ₁	Plate decoupling for tube V ₅		
R ₂₂	Same as R ₁₇	Plate load for tube V ₅	CT	25C040
R ₂₃	Resistor, variable, 500,000 ohm \pm 20%, carbon, includes SPST switch on rear	TONE CONTROL		
R ₂₄	Resistor, fixed 130 ohm \pm 5%, 1 watt, carbon	Cathode bias for tube V ₇	ASA	RC31AE131J
R ₂₅	Resistor, fixed, 100 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Impedance matching for headset operation	ASA	RC21AE101K
R ₂₆	Resistor, fixed, 4700 ohm \pm 10%, $\frac{1}{2}$ watt, carbon	Plate load for tube V ₆	ASA	RC21AE472K
R ₂₇	Resistor, fixed, 50,000 ohm, $\frac{1}{2}$ watt, carbon, part of transformer T ₅ . Shown for reference only	Grid bias for tube V ₆		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
R28 R29 R30	Resistor, plug-in ballast tube, resistance across pins 2 and 3 is 500 ohms, across pins 2 and 8 is 240 ohms and across pins 7 and 8 is 120 ohms, type BK29D	Line voltage dropping Pilot lamp shunt Pilot lamp shunt	MT	24A816
R31	Resistor, fixed, 27 ohm \pm 10%, 1 watt, carbon		ASA	RC31AE270K
R32	Resistor, fixed, 3900 ohm \pm 10%, 1 watt, carbon		ASA	RC31AE392K
R33	Same as R ₁	Rectifier peak current limiter		
C1A C1B C1C	Capacitor, variable, 3 section ganged, min. cap. 12.5 mmfd. max. cap. 562.8 mmfd. per section, 3 mtg. spade bolts 7/16" long, 2 at front with 1 at rear, air dielectric, steel frame, special	Main tuning, antenna stage Main tuning, converter stage Main tuning, oscillator stage	OM	48B059
C2	Capacitor, fixed, 0.01 mfd. -10 + 40%, 400 V. D-C working, paper dielectric		SP	46AW103J
C3	Capacitor, fixed, 0.05 mfd. -10 + 40%, 400 V. D-C working, paper dielectric		SP	46AW503J
C4 C5 C6	Same as C ₃ Not used	A-V-C by pass		
C7	Capacitor, fixed, 5.75 \pm 0.75 mmfd., 500 V. D-C working, temp. coeff. -0.00075 mmfd./mmfd./ degree C., ceramic dielectric	Cathode by-pass for tube V ₁	CRL	47A005
C8 C9 C10	Capacitor, fixed, 0.25 mfd. -10 + 40%, 400 V. D-C working, paper dielectric Same as C ₃ Same as C ₃	Additional coupling between tubes V ₁ and V ₂ on Band 4	SP	46AV254J
C11	Capacitor, fixed, 0.1 mfd. -10 + 40%, 400 V. D-C working, paper dielectric	Screen by-pass for tube V ₁	SP	46AV104J
C12 C13 C14	Capacitor, fixed, 0.02 mfd. -10 + 40%, 400 V. D-C working, paper dielectric Same as C ₁₁ Same as C ₂ Same as C ₇	Over-load bias by-pass Cathode by-pass for tube V ₂ Screen by-pass for tube V ₂	SP	46AW203J
C15 C16 C17	Same as C ₁₁ Same as C ₁₁ Same as C ₂	A-V-C by-pass for tube V ₃ Cathode by-pass for tube V ₃ Screen by-pass for tube V ₃ D-C blocking capacitor between electrical ground and chassis A-V-C by-pass for tube V ₄ Cathode by-pass for tube V ₄ Screen by-pass for tube V ₄		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
C18	Capacitor, fixed, 10 mmfd. \pm 10%, 500 V. D-C working, temp. coeff. - 0.00055 mmfd./mmfd./degree C, ceramic dielectric	Coupling between tubes V ₆ and V ₅	CRL	47A006
C19	Capacitor, fixed, 100 mmfd., \pm 20%, 500 V. D-C working, mica dielectric	R-F by-pass at diode load	ASA	CM20A10LM
C20	Same as C19	R-F by-pass at diode load		
C21	Same as C11. 02	Audio coupling between diode load and triode section of tube V ₅		
C22	Capacitor, fixed, 10 mfd. -10 \pm 65%, 25 V. D-C working, electrolytic, type PR-25	Cathode by-pass tube V ₅	A	42A033
C23	Same as C ₃	Plate decoupling for tube V ₅		
C24	Capacitor, fixed, 270 mmfd. \pm 10%, 500 V. D-C working, mica dielectric	R-F by-pass in plate circuit of tube V ₅	ASA	CM20A27LK
C25	Same as C ₃	Audio coupling between tubes V ₅ and V ₇		
C26	Same as C ₂	High frequency audio shunt in TONE CONTROL circuit		
C27	Capacitor, fixed, 0.005 mfd. -10 \pm 40%, 600 V. D-C working, paper dielectric	Plate by-pass for tube V ₇	SP	46AZ502J
C28	Capacitor, fixed, 0.01 mfd. -10 \pm 40%, 400 V. D-C working, paper dielectric, type 484	Feed back coupling for tube V ₆	A	46AW103J
C29	Capacitor, fixed, 250 mmfd. \pm 10%, mica dielectric, part of transformer T ₅ . Shown for reference only	Grid bias by-pass for tube V ₆		
C30	Capacitor, fixed, 200 mmfd. \pm 10%, silver mica dielectric, part of transformer T ₅ . Shown for reference only	Fixed capacitor to tune transformer T ₅		
C31	Capacitor, variable, min. cap. 3 mmfd., max. cap. 8.3 mmfd., air dielectric, ceramic insulation, type series 22.	Variable capacitor tuning transformer T ₅	RC	48A108
C32	Capacitor, fixed, 3 unit assembly; units #1 and #2 each 40 mfd. 150 V. D-C working, electrolytic (C ₃₂ and C ₃₃); unit #3 is 30 mfd. 150 V. D-C working (C ₃₅), type L3388	<div> <div>Output filter capacitor for plate voltage supply</div> <div>Input filter capacitor for plate voltage supply</div> <div>Power line filter by-pass</div> </div>	SP	42A038
C33	Same as C ₃			
C34	Capacitor, unit #3 of 3 unit assembly, refer to description for C ₃₂ and C ₃₃			
C35		Output filter capacitor for plate and screen voltage supply for tube V ₂		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
C ₃₆	Same as C ₁₉	Oscillator grid coupling		
C ₃₇	Capacitor, fixed, 2200 mmfd. \pm 10%, 500 V. D-C working, mica dielectric	D-C blocking capacitor in oscillator plate circuit	ASA	CM30A202K
C ₃₈	Capacitor, adjustable, min. cap. 1 mmfd., max. cap. 12 mmfd., air dielectric, mica filled bakelite insulation, type 22-5230	Padding capacitor for secondary of transformer T ₁₄	MN	48AO31
C ₃₉	Capacitor, adjustable, part of dual unit, nominal capacity 1300 mmfd., 500 V. D-C working, mica dielectric, compression type adjustment, ceramic insulation, refer to C ₄₁	Padding capacitor for secondary of transformer T ₁₅	UE	44AO69
C ₄₀	Capacitor, adjustable, min. cap. 183 mmfd., max. cap. 846 mmfd., 500 V. D-C working, mica dielectric, compression type adjustment, ceramic insulation, special	Padding capacitor for secondary of transformer T ₁₆	UE	44AO70
C ₄₁	Capacitor part of dual unit, nominal capacity 110 mmfd., 500 V. D-C working, refer to C ₃₉	Padding capacitor for secondary of transformer T ₁₇	UE	44AO69
C ₄₂	Capacitor, fixed, 0.1 mfd. -10 + 40%, 200 V. D-C working, paper dielectric	R-F gain by-pass	SP	46AT104J
C ₄₃	Not used			
C ₄₄	Not used			
C ₄₅	Capacitor, fixed, 26 mmfd. \pm 10%, 500 V. D-C working, temp. coeff. -0.00075 mmfd./mmfd./degree C., ceramic dielectric	Fixed padding capacitor for secondary of transformer T ₁₄	CRL	47AO36
C _{46A}	Capacitor, adjustable; 4 unit assembly; unit #1 effective capacity 6 mmfd. (C _{46C}), unit #2 effective capacity 6 mmfd. (C _{46D}), unit #3 effective capacity 10 mmfd. (C _{46A}), unit #4 effective capacity 10 mmfd. (C _{46B}), mica dielectric, ceramic insulation, heavy copper bracket, special	Trimmer for secondary of transformer T ₆	UE	44AO71
C _{46B}		Trimmer for secondary of transformer T ₇		
C _{46C}		Trimmer for secondary of transformer T ₈		
C _{46D}		Trimmer for secondary of transformer T ₉		
C _{47A}	Same as C ₄₆ ; C _{47A} same as C _{46A} ; C _{47B} same as C _{46B} ; C _{47C} same as C _{46C} ; C _{47D} same as C _{46D}	Trimmer for secondary of transformer T ₁₀		
C _{47B}		Trimmer for secondary of transformer T ₁₁		
C _{47C}		Trimmer for secondary of transformer T ₁₂		
C _{47D}		Trimmer for secondary of transformer T ₁₃		

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
C48A	Capacitor, adjustable, 4 unit assembly; unit #1 effective capacity 35 mmfd. (C48C), unit #2 effective capacity 35 mmfd. (C48D), unit #3 effective capacity 8 mmfd. (C48A), unit #4 effective capacity, 25 mmfd. (C48B); mica dielectric, ceramic insulation, heavy copper bracket, special	Trimmer for secondary of transformer T14	UE	44A072
C48B		Trimmer for secondary of transformer T15		
C48C		Trimmer for secondary of transformer T16		
C48D		Trimmer for secondary of transformer T17		
C49	Capacitor, fixed, 100 mfd. \pm 10%, 500 V. D-C working, mica dielectric	Resonating capacitor for primary of transformer T1	ASA	CM25E101K
C50	Same as C49	Resonating capacitor for secondary of transformer T1		
C51	Not used			
C52	Same as C3, p2			
C53	Same as C7			
C54	Same as C49	Plate return for tube V2		
C55	Same as C49	D-C blocking capacitor between electrical ground and chassis		
C56	Same as C49	Resonating capacitor for primary of transformer T2		
C57	Same as C49	Resonating capacitor for secondary of transformer T2		
		Resonating capacitor for primary of transformer T3		
		Resonating capacitor for secondary of transformer T3		
T1	Transformer, I-F, 1600 KC., primary and secondary tuned by adjustable iron core, fixed trimmers of 100 mmfd., secondary winding tapped for grid connection, special	Coupling between tubes V2 and V3	SWI	50B137
T2	Same as T1, except A-V-C lead is 1" longer	Coupling between tubes V3 and V4	SWI	50C090
T3	Transformer, I-F, 1600 KC. primary and secondary tuned by adjustable iron core, fixed trimmers of 100 mmfd., special	Coupling between tubes V4 and V5	SWI	50C091
T4	Transformer, A-F, primary impedance 2000 ohm, secondary impedance 50 ohm tapped at 4 ohm, potted, special	Coupling between audio amplifier tube V7 and phones or speaker	QN	55B013

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
T ₅	Transformer, R-F, 1600 KC, variable iron core adjustment, fixed 200 mmfd. trimmer, includes 250 mmfd. fixed capacitor in parallel with a 50,000 ohm resistor, connected in series with secondary start, secondary finish and-primary start have common terminal, special	Beat frequency oscillator transformer	SWI	54B017
T ₆	Transformer, R-F, range 110-418 KC., air core, special	Coupling between antenna and r-f stage for Band #1	SWI	51B313
T ₇	Transformer, R-F, range 390-1500 KC, air core, special	Coupling between antenna and r-f stage for Band #2	SWI	51B316
T ₈	Transformer, R-F, range 1.7-5.9 megacycles, air core, special	Coupling between antenna and r-f stage for Band #3	SWI	51B319
T ₉	Transformer, R-F, range 5.1-19.4 megacycles, air core, special	Coupling between antenna and r-f stage for Band #4	SWI	51B322
T ₁₀	Transformer, R-F, range 110-418 KC; air core, special	Coupling between r-f stage and converter stage for Band #1	SWI	51B314
T ₁₁	Transformer, R-F, range 390-1500 KC, air core, special	Coupling between r-f stage and converter stage for Band #2	SWI	51B317
T ₁₂	Transformer, R-F, range 1.7-5.9 megacycles, air core, special	Coupling between r-f stage and converter stage for Band #3	SWI	51B320
T ₁₃	Transformer, R-F, range 5.1-19.4 megacycles, air core, special	Coupling between r-f and stage converter stage for Band #4	SWI	51B323
T ₁₄	Transformer, R-F, range 110-418 KC, air core, special	Oscillator stage transformer for Band #1	SWI	51B315
T ₁₅	Transformer, R-F, range 390-1500 KC, air core, special	Oscillator stage transformer for Band #2	SWI	51B318
T ₁₆	Transformer, R-F, range 1.7-5.9 megacycles, air core, special	Oscillator stage transformer for Band #3	SWI	51B321
T ₁₇	Transformer, R-F, range 5.1-19.4 megacycles, air core, special	Oscillator stage transformer for Band #4	SWI	51B324
L ₁	Inductor, radio - frequency coil, air core, universal winding on bakelite base	Antenna loading coil for Band #1	SWI	53B011
L ₂	Inductor, R-F, inductance 10 millihenries \pm 10%, distributed capacity 7 mmfd., air core, universal winding on XXP bakelite base, special	R-F filter inductance for tube V ₂	SWI	53A005

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S PART NO.
L ₃	Same as L ₂	R-F filter inductance for tube V ₁		
CH ₁	Inductor, filter, 4 henries @ 60 milliamperes, 200 ohm d-c resistance, wax dipped, type 1B51	Part of high-voltage low pass filter	GT	56B003
SW ₁	Switch, SPST, toggle, bakelite insulation, mounts by 15/32-32 brass bushing 13/32" deep, type 20994BP	A.V.C. switch	HH	60A126
SW ₂	Same as SW ₁	B.F.O. switch		
SW ₃	Same as SW ₁	SEND-REC. switch		
SW ₄	Switch, SPST, toggle action, on rear of resistor R ₂₃	Power switch	CT	25C040
SW _{5A}	Switch, rotary selector, 3 section, 4 position, shorting type contacts, bakelite wafers individually mounted to coil shield partitions, type B-11196	Band selector for primaries of transformers T ₆ , T ₇ , T ₈ and T ₉ Band selector for secondaries of transformers T ₆ , T ₇ , T ₈ and T ₉ Band selector for primaries of transformers T ₁₀ , T ₁₁ , T ₁₂ and T ₁₃ Band selector for secondaries of transformers T ₁₀ , T ₁₁ , T ₁₂ and T ₁₃ Band selector for primaries of transformers T ₁₄ , T ₁₅ , T ₁₆ and T ₁₇ Band selector for secondaries of transformers T ₁₄ , T ₁₅ , T ₁₆ and T ₁₇	MA	62B004
SW _{5B}				
SW _{5C}				
SW _{5D}				
SW _{5E}				
SW _{5F}				
J ₁	Jack, phone, switching action, one make-one break, bakelite insulation, 3/8-32 brass bushing 1/2" long, type SF-687	Phone jack	U	36B004
F ₁	Fuse, 2 amperes @ 250 V., glass enclosed, 3AG, type 1042	Line protection	LF	39A307
F ₂	Same as F ₁	Line protection		
PL ₁	Plug and line cord assembly, 2 conductor #18 stranded copper, rubber covered, partially bonded to adjacent conductor jacket, 6 ft. long with molded rubber plug at one end, special	Connects receiver to source of power	E	87A078

REPLACEABLE PARTS LIST FOR S-22R RECEIVER - (Cont'd.)

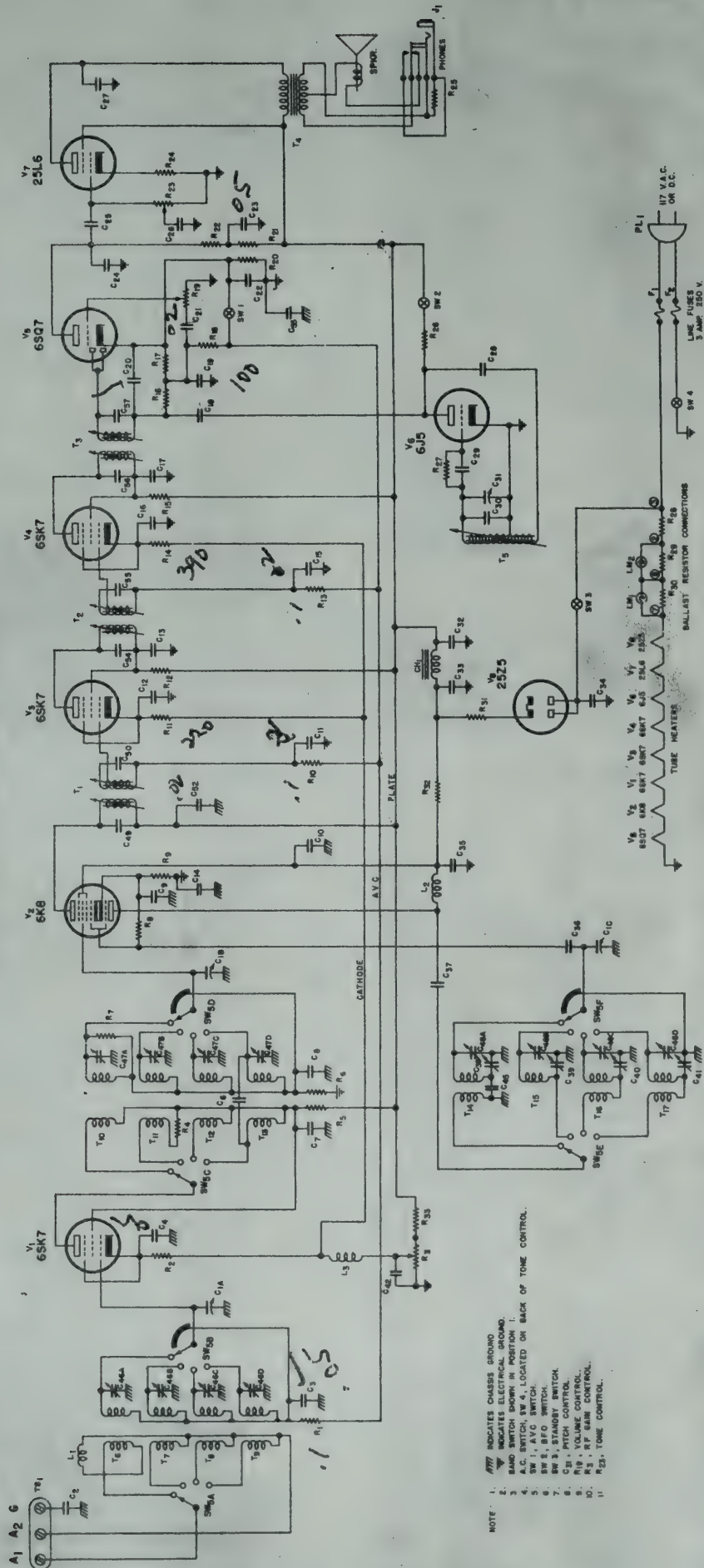
REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFR. CODE	CONTR.'S. PART NO.
LM ₁	Lamp, pilot, 6-8 volt @ 150 milliamperes, bayonet base, type 47	Bandspread dial illumination	GE	39A004
LM ₂	Same as LM ₁	Main tuning dial illumination		
V ₁	Tube, triple-grid super control amplifier, type 6SK7	R-F amplifier	RCA	90X6SK7
V ₂	Tube, triode-hexode converter, type 6K8	Converter and oscillator		
V ₃	Same as V ₁	1st I-F amplifier	RCA	90X6K8
V ₄	Same as V ₁	2nd I-F amplifier		
V ₅	Tube, duplex-diode, high-mu triode, type 6SQ7	Detector, A-F amplifier	RCA	90X6SQ7
V ₆	Tube, detector amplifier triode, type 6J5	Beat frequency oscillator	RCA	90X6J5
V ₇	Tube, beam power amplifier, type 25L6	A-F power amplifier	RCA	90X25L6
V ₈	Tube, rectifier-doubler, type 25Z5	Rectifier	RCA	90X25Z5

INDEX TO PARTS MANUFACTURERS

SYMBOL	MANUFACTURER	SYMBOL	MANUFACTURER
A	Aerovox Corp. New Bedford, Mass.	MN	Meissner Mfg. Co. Mt. Carmel, Illinois
ASA	Any manufacturer meeting the applicable American Standard Association specification	MT	The Muter Co. Chicago, Illinois
CRL	Centralab Milwaukee, Wis.	OM	Oak Mfg. Co. Chicago, Illinois
CT	Chicago Telephone & Supply Co. Elkhart, Indiana	QN	Quam-Nichols Co. Chicago, Illinois
E	Essex Wire Co. Chicago, Illinois	RC	Radio Condenser Corp. Camden, N.J.
GE	General Electric Co. Schenectady, N.Y.	RCA	R.C.A. Mfg. Co. Harrison, N.J.
GT	General Transformer Corp. Chicago, Illinois	SP	Sprague Specialties Co. North Adams, Mass.
HH	Hart & Hegeman Elec. & Co. Hartford, Conn.	SWI	S.W. Inductor Chicago, Illinois
LF	Littlefuse Inc. Chicago, Illinois	U	Utah Radio Products Co. Chicago, Illinois
MA	P.R. Mallory & Co. Indianapolis, Indiana	UE	Underwood Elec. Chicago, Illinois

1/16 Hallicrafters Co.

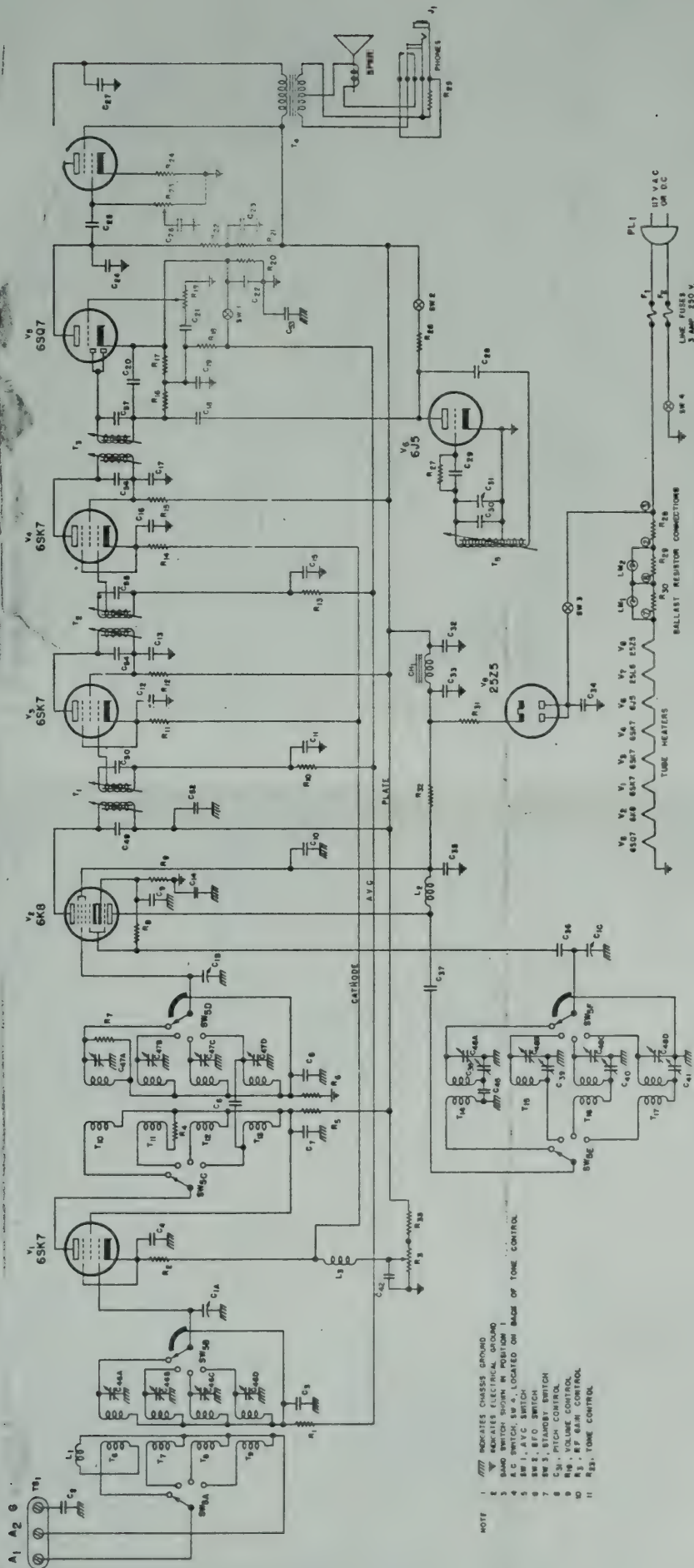
SCHEMATIC DIAGRAM - SKYRIDER MARINE - MODEL S-22R



- NOTE
1. --- INDICATES CHASSIS GROUND.
 2. --- INDICATES ELECTRICAL GROUND.
 3. BAND SWITCH SW 4, LOCATED ON BACK OF TONE CONTROL.
 4. A.C. SWITCH, SW 4, LOCATED ON BACK OF TONE CONTROL.
 5. SW 1, A.C. SWITCH.
 6. SW 2, A.C. SWITCH.
 7. SW 3, STANDBY SWITCH.
 8. SW 4, PITCH CONTROL.
 9. SW 5, VOLUME CONTROL.
 10. SW 6, RF GAIN CONTROL.
 11. SW 7, TONE CONTROL.

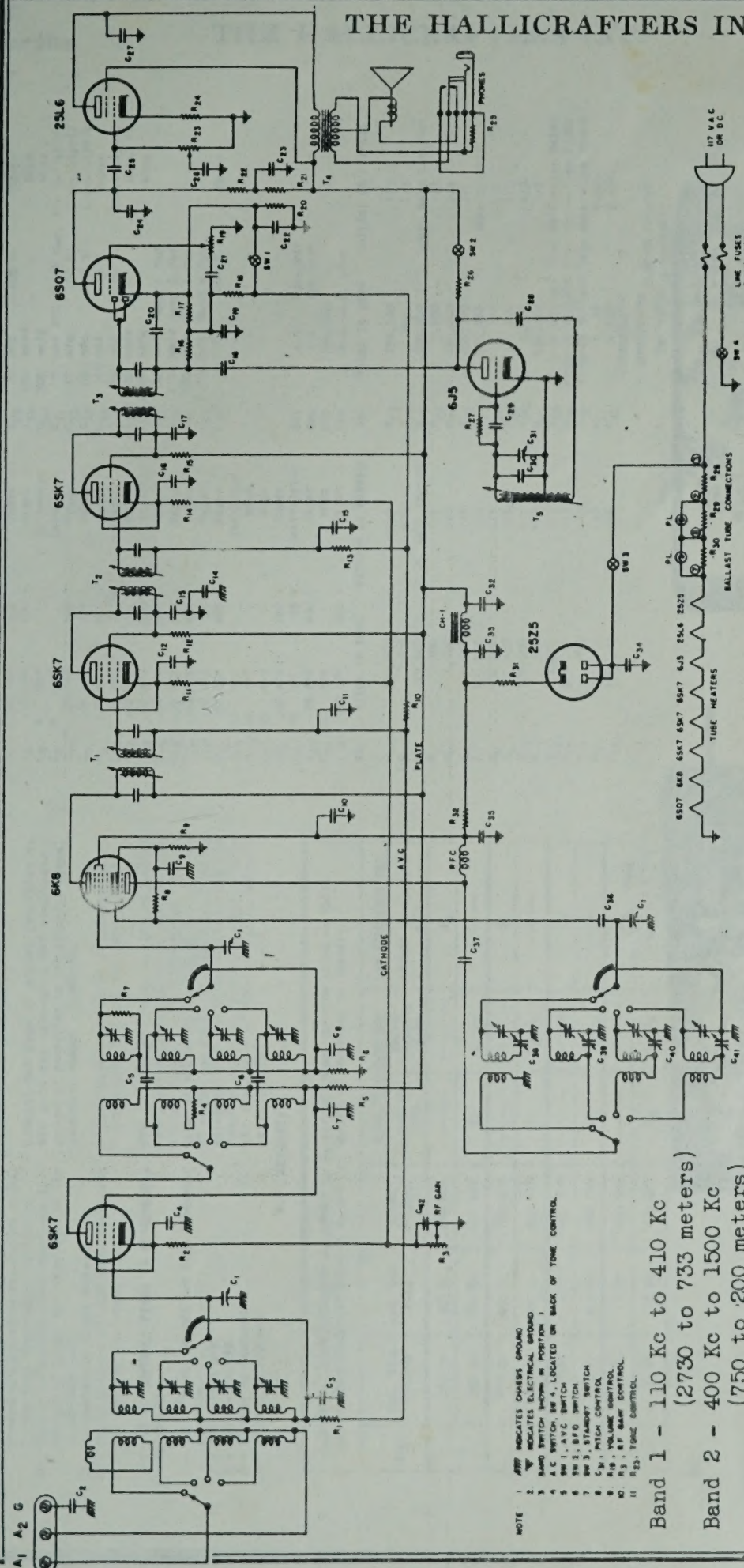
the hallicrafters co.

SCHEMATIC DIAGRAM - SKYRIDER MARINE - MODEL S-22



- NOTE
- 1 INDICATES CHASSIS GROUND
 - 2 CHASSIS SWITCHES SHOWN IN POSITION 1
 - 3 CHASSIS SWITCHES SHOWN IN POSITION 2
 - 4 SW 1, AVC SWITCH
 - 5 SW 2, SFO SWITCH
 - 6 SW 3, STANDBY SWITCH
 - 7 SW 4, PITCH CONTROL
 - 8 SW 5, PITCH CONTROL
 - 9 SW 6, PITCH CONTROL
 - 10 SW 7, PITCH CONTROL
 - 11 SW 8, PITCH CONTROL

THE HALLICRAFTERS INC.

MODEL S-22R
Skyrider Marine


If an inverted "L" antenna is used, connect lead-in to A₁ and leave the jumper between A₂ and G. If an "all wave" doubler is used, connect the transmission line to A₁ and A₂ with the jumper removed from A₂ and G. A separate antenna may be used for one s-w band; use a half-wave antenna whose length can be calculated from

$$\text{Length in feet} = \frac{463}{\text{Frequency in megacycles}}$$

Frequency in megacycles

NOTE: The SKYRIDER MARINE Model S22R is an AC-DC receiver which operates on 110/125 volts only. Should operation be desired from a lower voltage DC source, an external converter delivering 110/125 volts should be used. A 220 volt DC Model S22R is available on order and uses a special line cord with dropping resistor.

- Band 1 - 110 Kc to 410 Kc (2730 to 733 meters)
- Band 2 - 400 Kc to 1500 Kc (750 to 200 meters)
- Band 3 - 1.7 Mc to 5.9 Mc (177 to 51 meters)
- Band 4 - 5.3 Mc to 18 Mc (56 to 16.7 meters)

NOTE 1 INDICATES CHASSIS GROUND
2 BAND SWITCH SHOWN IN POSITION 1
3 A.C. SWITCH, SW 4, LOCATED ON BACK OF TONE CONTROL
4 SW 1, A.V.C. SWITCH
5 SW 2, TUNING CONTROL
6 SW 3, TUNING CONTROL
7 SW 4, TUNING CONTROL
8 SW 5, TUNING CONTROL
9 SW 6, TUNING CONTROL
10 SW 7, TUNING CONTROL
11 SW 8, TUNING CONTROL

MODEL S-22R

Skyrider Marine

THE HALLICRAFTERS INC.

ALIGNMENT PROCEDURE

ALIGNMENT INSTRUCTIONS:

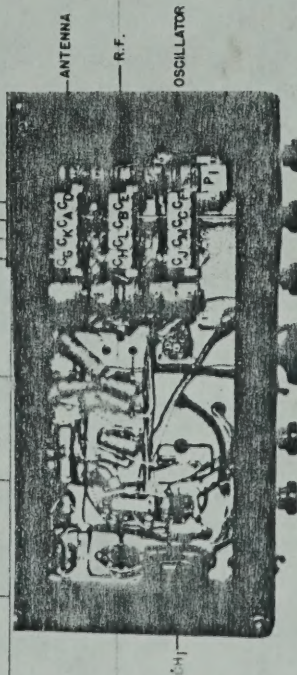
Equipment needed for aligning:

- 1 - An all wave signal generator which will provide an accurately calibrated signal at the test frequencies indicated.
 - 2 - Output indicating meter connected to a headphone plug, and inserted in the headphone jack.
 - 3 - Non-metallic screw driver.
 - 4 - Dummy antenna of .002 mfd. condenser and 400 ohm resistor.
- SETTING OF CONTROLS PRIOR TO ALIGNMENT - IF AND RF.**
- 1 - Tune control at maximum high frequency position.
 - 2 - AVC switch OFF.
 - 3 - BFO switch OFF.
 - 4 - RF Gain at maximum.
 - 5 - AF Gain at maximum.

R.F. ALIGNMENT

Connect hot Lead of Signal Generator to A₁ through dummy Antenna shown in Table.
Leave Jumper connected between A₂ and G. Ground of Generator to Chassis.

BAND	REC. DIAL SETTING	SIG. GEN. FREQ.	DUMMY ANTENNA	HIGH FREQUENCY END ADJUST OSC WITH	ADJUST TRIMMERS WITH	LOW FREQUENCY END ADJUST OSCILLATOR WITH
1	125 Kc	125 Kc	.002 mfd	-----	-----	P ₁
	350 Kc	350 Kc	.002 mfd	C _G	C _A -C _B	-----
2	450 Kc	450 Kc	.002 mfd	-----	-----	P ₂
	1400 Kc	1400 Kc	.002 mfd	C _F	C _E -C _D	-----
3	2 Mc	2 Mc	400 Ohm	-----	-----	P ₃
	4.5 Mc	4.5 Mc	400 Ohm	C _J	C _G -C _H	-----
4	7 Mc	7 Mc	400 Ohm	-----	-----	P ₄
	15 Mc	15 Mc	400 Ohm	C _I	C _L -C _K	-----



NO.	VALUE	VOLTAGE OR PURPOSE	TYPE	NO.	VALUE	VOLTAGE OR PURPOSE	TYPE
C ₁	Tuning Condenser	563 mmf per section	Paper	C ₂₆	.01 mfd	400 V.	Paper
C ₂	.01 mfd	400 V.	Paper	C ₂₇	.005 mfd	600 V.	Paper
C ₃	.05 mfd	400 V.	Paper	C ₂₈	.01 mfd	400 V.	Paper
C ₄	.05 mfd	400 V.	Paper	C ₂₉	250 mmf		Mica
C ₅	5 mmf		Ceramic	C ₃₀	200 mmf		Mica
C ₆	5 mmf		Ceramic	C ₃₁	5 mmf BFO Pitch Con.	Air Variable	
C ₇	.25 mfd	400 V.	Paper	C ₃₂	40 mfd	150 V.	Electrolytic
C ₈	.05 mfd	400 V.	Paper	C ₃₃	40 mfd	150 V.	Electrolytic
C ₉	.05 mfd	400 V.	Paper	C ₃₄	.05 mfd	400 V.	Paper
C ₁₀	.1 mfd	400 V.	Paper	C ₃₅	30 mfd	150 V.	Electrolytic
C ₁₁	.02 mfd	400 V.	Paper	C ₃₆	100 mmf		Mica
C ₁₂	.02 mfd	400 V.	Paper	C ₃₇	2000 mmf		Mica
C ₁₃	.01 mfd	400 V.	Paper	C ₃₈	32 mmf	Band 1 Pad	
C ₁₄	.25 mfd	400 V.	Paper	C ₃₉	110 mmf	Band 2 Pad	
C ₁₅	.02 mfd	400 V.	Paper	C ₄₀	480 mfd	Band 3 Pad	
C ₁₆	.02 mfd	400 V.	Paper	C ₄₁	1300 mfd	Band 4 Pad	
C ₁₇	.01 mfd	400 V.	Paper	C ₄₂	.1 mfd	200 V.	Paper
C ₁₈	10 mmf		Ceramic				
C ₁₉	100 mmf		Mica				
C ₂₀	100 mmf		Mica				
C ₂₁	.02 mfd	400 V.	Paper				
C ₂₂	10 mf	25 V.	Electrolytic				
C ₂₃	.05 mfd	400 V.	Paper				
C ₂₄	250 mfd		Mica				
C ₂₅	.05 mfd	400 V.	Paper				
R ₁	100,000		1/3	R ₁₇	250,000		1/3
R ₂	100,000		1/3	R ₁₈	1 Meg.		1/3
R ₃	25,000		1/3	R ₁₉	500,000	Audio Gain Control	
R ₄	400		1/3	R ₂₀	7,500		1/3
R ₅	1,000		1/3	R ₂₁	100,000		1/3
R ₆	100,000		1/3	R ₂₂	250,000		1/3
R ₇	100,000		1/3	R ₂₃	500,000	Tone Control	
R ₈	50,000		1/3	R ₂₄	140		1/2
R ₉	400		1/3	R ₂₅	100		1/2
R ₁₀	100,000		1/3	R ₂₆	5,000		1/3
R ₁₁	500		1/3	R ₂₇	250,000		1/3
R ₁₂	1,000		1/3	R ₂₈	Plug-in Ballast Tube Muter-Type BK29D		
R ₁₃	100,000		1/3	R ₂₉	Plug-in Ballast Tube Muter-Type BK29D		
R ₁₄	400		1/3	R ₃₀	Plug-in Ballast Tube Muter-Type BK29D		
R ₁₅	1,000		1/3	R ₃₁	25	1 Watt	
R ₁₆	100,000		1/3	R ₃₂	4,000	1/2 Watt	

CONDENSERS PLUG-IN BALLAST
C₃₂ C₃₃ C₃₅ / R₂₈ R₂₉ R₃₀

